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ABSTRACT

The papers included in this collection deal with many of the important issues facing US higher education. Papers in Part I are principally concerned with student related issues. The first study examines the process of choosing a postsecondary education. The second considers financial barriers to higher education. State efforts to remove such barriers are the topic of the third. The fourth paper discusses aspects of the expansion of educational opportunity beyond high school. The fifth concentrates on trends in high school vocational education which seem most likely to have significant effects upon future demands for postsecondary education. Part II contains papers concerned with institutional problems and capabilities for expanding educational opportunity. An in-depth review of financing is followed by a study of the junior college role. The next 3 studies deal with the college faculty member: supply and demand, need for new types of faculty to deal with new types of students, and public vocational institution teachers. The sixth discusses the growth of public postsecondary vocational education; and the last studies the current status of proprietary schools. (JS)

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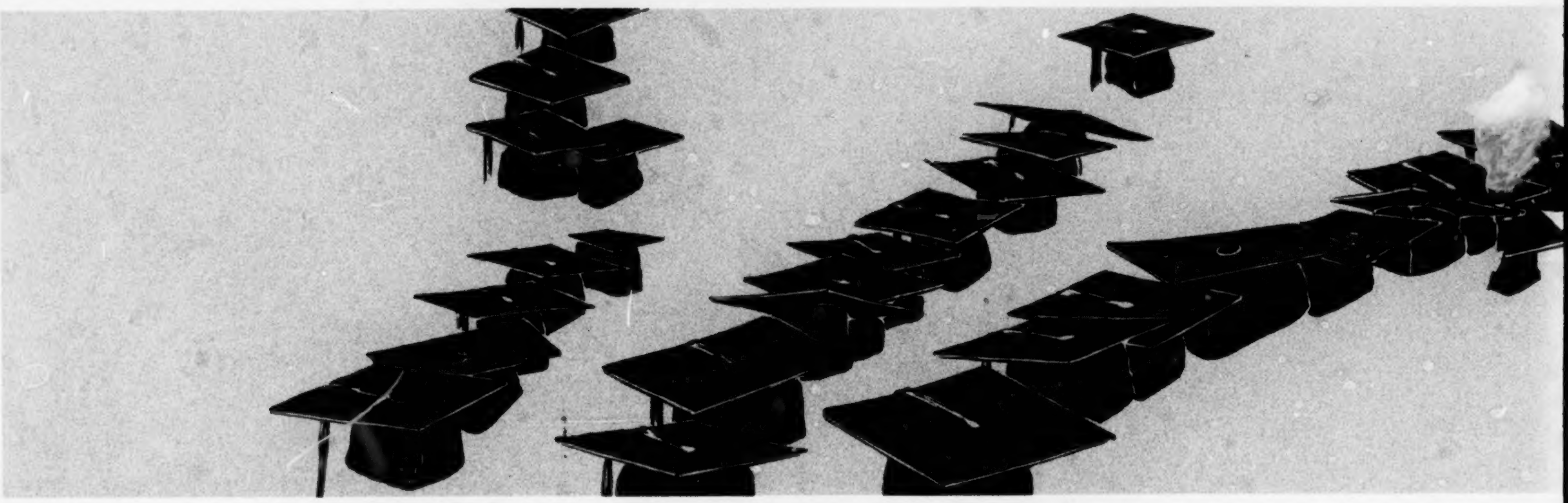

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Foreword

The papers included in this collection were commissioned by the Bureau of Higher Education, U.S. Office of Education. In view of the increasing interest in the expansion of postsecondary educational opportunity, it seemed appropriate that efforts be made to gather data on a recent and timely basis. The coverage of subjects in this collection does not presume to be comprehensive, but each study deals with some of the most important problems facing postsecondary education in the United States today.

The studies in this volume are divided into two groups. Part I includes those papers which deal principally with problems relating to students. Part II contains studies which are concerned with institutional problems and capabilities for expanding educational opportunity.

Part I begins with a study of the student decision process regarding postsecondary education, an accumulative process involving many factors. Financial barriers to higher education are the subject of the second paper in this section. The author looks at conceptual issues arising in the assessment of financial barriers and also available information about such barriers. Information on financial costs of college, financial need, and financial aid is considered, in order to assess the impact of financial barriers for students at the major types of higher education institutions. State efforts to remove such financial barriers are reviewed in the third paper. Major attention is directed to those comprehensive State programs of undergraduate assistance (noncategorical) applicable to public and nonpublic institutions. The next paper in this section suggests various aspects of relevance which the author feels must be considered in the expansion of educational opportunity beyond the high school. The final paper in the section concentrates on trends in high school vocational education which seem most likely to have significant effects upon future demands for postsecondary education.

Part II opens with an indepth review of the financing of higher education. Past financial trends for different types of institutions are considered in detail and expenditure projections for the future are developed in this study. Next follows a study of the junior college role in postsecondary education. The paper looks at the mission of the junior colleges and their performance in removing geographical, financial and social barriers to increased educational opportunity. The three succeeding papers deal with various aspects of the problem of faculty in postsecondary education. The first study attempts to forecast the supply and demand for faculty in higher education to 1975–76. The second paper on the subject inquires into the need for new kinds of faculty to teach the new types of students expected to be enrolling in higher education in the future. The third faculty paper considers the outlook for teachers in public postsecondary vocational education. The final two papers in this section deal with vocational education in the United States today. The first considers the growth of public postsecondary occupational education. The second study looks at the current state of proprietary schools and the expanding types of postsecondary education such private vocational schools are providing to students.

Views expressed in this collection do not necessarily represent the views of the Bureau of Higher Education or the Office of Education. Rather, this volume is an attempt to place in a single collection information from knowledgeable people which hopefully will be useful to those who must plan for America's postsecondary education in the future.

October 1970

PETER P. MUIRHEAD
Associate Commissioner,
Bureau of Higher Education.

Contents

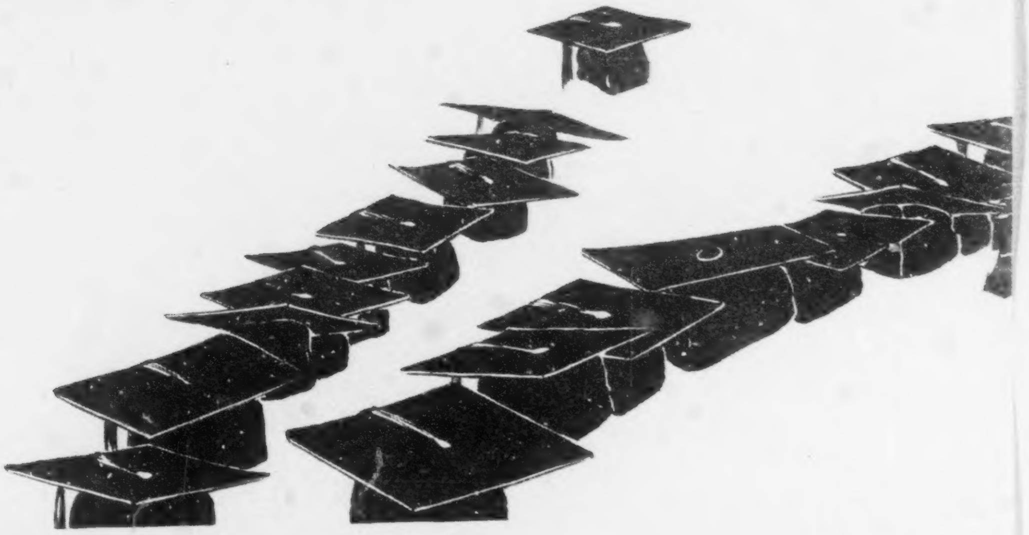
Foreword iii

Part I. Papers on Areas Relating to Students

1. The Decision to go to College: An Accumulative Multivariate Process—*James W. Trent* 1
2. An Examination of Financial Barriers to College Attendance—*W. Lee Hansen* 31
3. An Examination of State Efforts to Remove Financial Barriers to Postsecondary Education—*Joseph D. Boyd* 57
4. The Importance of Relevance in Expanding Postsecondary Education—*Warren W. Willingham* 69
5. Trends in Secondary School Vocational Education Which Are Likely to Affect Postsecondary Education Demands—*Rupert N. Evans* 85

Part II. Papers on Areas Relating to Institutions

1. The Financing of Higher Education: A Review of Historical Trends and Projections for 1975–76 —*Ernst Becker* 97
2. The Role of the Junior College in Providing Postsecondary Education For All—*K. Patricia Cross* 181
3. Forecast of the Supply and Demand for Faculty in Higher Education to 1975–76—*Abbott L. Ferriss* 197
4. Faculty Resources for Universal Higher Education —*T. R. McConnell* 219
5. The Outlook for Adequate Faculty in Public Postsecondary Vocational Education—*Robert M. Worthington* 227
6. Public Postsecondary Occupational Education in the United States—*Charles V. Mercer* 239
7. Private Vocational Schools: Their Emerging Role in Postsecondary Education—*A. Harvey Belitsky* 251



Part I.

PAPERS ON AREAS RELATING TO STUDENTS

·1·

The Decision to Go to College: An Accumulative Multivariate Process

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and Associate of the Center
for the Study of Evaluation,
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I wish to acknowledge very gratefully the assistance of the ERIC Clearinghouses on Higher Education and Junior Colleges and particularly Mrs. Lora Robinson and Mr. Michael Capper who were most helpful in assembling pertinent references.

I. INTRODUCTION

Contemporary American society, technocratic and complex, contains singular opportunities and problems. Its technocracy and affluence affords most of its citizens a style of life in terms of goods, services and leisure that is unprecedented. Yet, America's citizens must be unusually enlightened and competent in order to make appropriate uses of its opportunities and at the same time deal with its problems. It is quite possible that universal higher education has become a major means, if not a prerequisite, for such a citizenry. In this context, the national goal of providing higher education for all who can profit from it appears not just commendable, but essential.

However, it is of no avail merely to espouse universal higher education. Sufficient financial and professional support of appropriate programs must follow before universal higher education can be implemented. This kind of support is not evident at the present time. Even if it can be assumed that it will be available, it will not be effective without equally sufficient knowledge about the social-psychological factors that contribute to young adults' decisions to attain a higher education or to reject this opportunity. As a case in point, current research indicates that should the Federal Government offer financial assistance to every individual who could not otherwise afford college, this would probably make a difference only to a minority of academically able college-age youths who are not now in college.

Clearly, both academic aptitude and financial status contribute to the decision to enter college. Clearly, too, much more is involved than these two factors for a great many individuals, and programs designed to promote higher education must take these other important factors into account as well. Therefore, those educators and officials responsible for the provision and progress of higher education urgently need a close knowledge of the relative influence of the many factors that contribute to the individual's decision to enter college and make use of its opportunities.

Behaviorally, a decision may be taken as "the formulation of a course of action with intent to execute it." [1] The determination to enter college is not generally a spontaneous decision. Rather, it is the result of numerous complex factors that have occurred over a long period of time, from early childhood to the point of consciousness of the intent to enter college, and that continue to contribute to persistence in college. To the writer's knowledge, only one major study (Tillery, 1969) has been designed from the beginning primarily to trace the process of decisionmaking regarding college sequentially. Voluminous research, however, has dealt with numerous individual factors related to college aspiration and attendance.

More recently, some research has examined the comparative association or influence of complexes of interrelated variables on the decision to enter college and actual attendance.[2] In a few cases, models are being developed in order to predict and deal with the decision to attend college.[3]

This study includes discussion of the nature and implications of the research as it pertains to the following sources of influence on college-going: family and peers; the community and school environment; and personal traits. Subsequent discussion centers on multivariate models for prognosis and alteration of decisionmaking related to college-going. Problems and propositions for future action in this context constitute the concluding discussion. (In a number of cases, time limitations necessitated relying upon abstracts rather than on direct review of the studies cited. Therefore generalizations should be regarded with this limitation in mind.)

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[1] H. B. English and A. C. English, *A Comprehensive Dictionary of Psychological and Psychoanalytical Terms.* New York: Longmans, Green, 1961.

[2] See Flanagan, *et al.*, 1964; Dole and Weiss, 1968; Trent and Medsker, 1968; and Trent, in press.

[3] See Clarke, *et al.*, 1965; Gelatt, 1966; Seron, 1967; and Trent, in press.

II. SOURCES OF INFLUENCE ON COLLEGE-GOING

Family and Peers

Over a decade ago three statewide surveys of young adults were conducted to determine the factors related to college attendance.[4] Prevalent factors related to college attendance evident from Beezer and Hjelm's 1961 synthesis of the surveys were academic aptitude, socioeconomic status, high school scholastic achievement, motivation, size of high school, peer group influence, parental influence, ethnic background, and community characteristics.

Research throughout the last decade verifies the continued potency and prevalency of these variables regarding college-going. There is some question as to whether socioeconomic status or academic aptitude has the greater influence on the decision to attend college. This will be discussed under the section on personal traits. There is also some question as to whether parents or peers have the greater influence. There can be no question, however, that each of these factors is relevant, singly and interdependently.

Socioeconomic Status

The major indices of socioeconomic status are parents' education and father's occupation. Higher socioeconomic status generally denotes college education and a professional occupation; a low level, failure to complete elementary or high school and a semi- or unskilled occupation. Socioeconomic status may be measured along a continuum from high to low. Associated with differences in socioeconomic status are not only differences in financial status among families and individuals, but differences in values that have great bearing on educational aspirations.

Individual research projects and a number of reviews of numerous studies consistently verify the relationship between socioeconomic status and educational aspiration and attainment.[5] Examination of this research directly or of reviews of the research leads to several major conclusions.

1. There is a high positive correlation between the educational attainment and occupational achievement of the father, determined by the status of the job and the income it produces. Likewise, there is a high positive correlation between the father's occupational achievement and the educational aspirations and achievements of his children.

2. Students whose fathers' occupations are classified at the high socioeconomic level (professional and managerial) increase in the proportion of their representation from grammar school to college so that there is an over-representation of college students of high socioeconomic status. Students of low socioeconomic status are, for the most part, precluded from higher education. The only exception is in the junior colleges, but even here lower socioeconomic status students usually withdraw without completing either a vocational or transfer program.

3. The relationship between socioeconomic status and type of college entered extends beyond the junior college. For example, students in liberal arts colleges, universities, and private institutions are over-represented at the high level of socioeconomic status and students attending teachers colleges and many State colleges are under-represented. The widest range of socioeconomic status is found in the junior college, but just as it has the largest representation of low socioeconomic status students, it has the least representation of high status students. One study based on a nationwide sample indicates that socioeconomic status is a primary determinant of both college choice and vocational orientation.[6]

4. The chances that children with superior intelligence will attend college increase with their socioeconomic status. In recent years there has been an increase in proportions of students who attend college, and in some regions a majority of high ability students of low socioeconomic status enter college. Yet, the distribution of socioeconomic status has not changed substantially among college students in spite of increased numbers of colleges since 1945, an increased proportion of high school graduating classes who enter college generally and an increase in college attendance among the brightest of low socioeconomic students. The phenomenon of withdrawal occurs over the entire range of socioeconomic status, but a disproportionate number of withdrawals are of low socioeconomic status, even when ability is held constant.

5. The relationship between socioeconomic status and college entrance varies by sex. Caucasian men of high socioeconomic status are most likely to enter college, particularly if they receive high grades in high school. High ability and high socioeconomic status women differ only negligibly from the men in this respect, but when achievement is not exceptionally high, proportionately fewer women than men enter college, particularly at the lower levels of socioeconomic status.

6. There is evidence that financial assistance is an important factor in the decision to enter college, especially for high ability, low socioeconomic students. There is also ample evidence, however, that the socioeconomic environment of the family, independent of both ability and finances, is a significant factor in a student's determination of the level of education he undertakes after high school. The fact is that the economic factor is not the key variable in the decision to enter college, regardless of socioeconomic status. This is indicated in studies of relatively small groups, such as that of Schoenfeldt. It is equally evident from interviews and surveys of thousands of youths across the country made by Trent and Medsker. It is also true in Denmark where State financial support for university students has been established for years.[7]

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[4] Little, 1959; Stroup and Andrew, 1959; and Wright and Jung, 1959.

[5] See Baird, 1967; Beezer and Hjelm, 1961; Berdie and Hood, 1965; Berelson and Steiner, 1964; Brown, 1966; Clark, 1960; Coster, 1963; Crawford, 1966; Cross, 1968; Geiger, 1955; Gysbers, *et al.*, 1968; Havighurst and Neugarten, 1967; Little, 1959; Medsker and Trent, 1965; Pearl, 1962; Rosinski, 1965; Sanders and Palmer, 1965; Schoenfeldt, 1968; Stroup and Andrew, 1959; Trent, in press; Trent and Medsker, 1968; Verner, 1965; Werts, 1967; and Wright and Jung, 1959.

[6] L. L. Baird, "Family Income and the Characteristics of College-Bound Students," *ACT Research Report No. 17,* Iowa City: American College Testing Program, 1967 b.

[7] T. Geiger, "Recruitment of University Students," *Acta Sociologia,* 1955, Vol. 1, pp. 39–48, L. F. Schoenfeldt, *Ability Family Socioeconomic Level and Advanced Education.* Paper presented at the annual conference of the American Educational Research Association, Chicago, 1966, and J. W. Trent and L. L. Medsker, *Beyond High School: A Psycho Sociological Study of 10,000 High School Graduates.* San Francisco: Jossey-Bass, 1968.

Socioeconomic Environment as Complex Process

The earlier statement that socioeconomic status is more than a matter of educational or financial status, but also a matter of differential values and behavior should now be clearer. Perhaps it is better conceived as a complex environmental process acting on the decisionmaking and other important aspects of a young person's life. It is centered in the family where its dynamics have the most critical effect. That effect bears on the individual's entire lifeline wherever he goes, in whatever environment beyond his family. A number of studies indicate attributes related to the socioeconomic environment that contribute to an understanding of its dynamics and which suggest the manner in which it effects the decision to enter college.[8] Generalizations based on the research follow.

1. The higher one's socioeconomic status, the greater are his contacts with all socioeconomic levels, and the greater is his range of experiences generally—and opportunities for choice. This may help account for the fact that the higher one's socioeconomic status, the greater the value he places on higher education for means and ends, including information and knowledge.

2. Parents are a potent influence on the values and behavior of their children at all socioeconomic levels. This adds to the significance that middle class parents much more than those of lower socioeconomic status stimulate a need for achievement, and encourage their children to achieve more, both in academic and nonacademic areas. Recent research indicates that a majority of parents at all socioeconomic levels would like their children to have a higher education, but as noted, upper socioeconomic level parents place much more stress on higher education.

3. The differences in the range of experiences, interests and values that distinguish among levels of socioeconomic status no doubt contribute to the differences in attitudes and behavior found among students of different socioeconomic levels. Grinder's research might be interpreted to this effect.[9] He concluded that among adolescent boys a strong orientation towards the father rather than peers (that is, disinterest in the "youth culture") is predictive of involvement in college-bound high school programs (as much as Grinder's subjects could be classified by program). Conversely, peer orientation rather than identification with the father is predictive of dropout status. More specifically, lack of involvement in school activities was associated with low academic standing, low academic aspirations, low father-son agreements and low socioeconomic status. Indications were that peer orientation was given impetus by low regard for father's occupation, the combination of which reduced commitment to school.

4. Corollary findings are manifest in most of the other research cited in footnote 8. Indications are that socioeconomic status determines environmental conditions which, in turn, condition such personality variables as academic self-concept and need for achievement, and these variables differentiate college-bound and noncollege subjects. The results appear not only in the greater motivation, persistence, and achievement of higher socioeconomic status students compared with those of lower status. The higher status students also are more frequently social leaders, are perceived by others as more competent, influence others more, participate more in extracurricular and other activities, and, as college-bound students, tend to be more sociable, less shy and to have fewer conflicts with their families and authority. Lower status students, in contrast, show dependence on, but also distrust for, authority, are more resigned to physical and psychological suffering (at least in the past), have an inferior self-concept, and a personality more characterized as limited, restricted and authoritarian. Knupfer underscores this point.

> Closely linked with economic underprivilege is psychological underprivilege: Habits of submission, little access to sources of information, lack of verbal facility. These things appear to produce a lack of self-confidence which increases the unwillingness of the low-status person to participate in many phases of our predominantly middle-class culture.[10]

The Press of Parent

Berelson and Steiner's 1964 review of the literature presents substantial evidence that opinions, attitudes and beliefs are "inherited" from parents. They are learned in early childhood and persist into adulthood.[11] Parental influence is a dominant, if not paramount, factor in the individual's perception of education and the resultant decisions he makes about it. The attitudes he has about education, and the role he sees for himself as an adult in relation to his education generally originate with his parents and bear directly on the approach he takes toward his education. Subsequent discussion of minority students and the personal traits related to achievement and aspiration touches on how parental values are transmitted. The task for the moment is to describe the relationship more specifically.

One of the most broadly based samples to provide information about the relationship was the approximately 10,000 students in 37 high schools across the country whom Trent and Medsker first surveyed as high school seniors and then followed up for another 5 years.[12] Twice as many eventual college attenders as nonattenders reported in the original survey having been encouraged to enroll in college by their parents. Nearly 70 percent of the students who later entered and persisted in college reported while still in high school that their parents definitely wanted them to attend college, compared with less than 50 percent of the withdrawals and less than 10 percent of the nonattenders. They also reported having discussed college plans more with their parents, having sought advice from their parents and more interaction and rapport generally with their parents.

There was a relationship between parental encouragement and socioeconomic status, but the strong relationship between parental encouragement and college attendance persisted even when controlling for both academic aptitude and socioeconomic status simultaneously. This relationship may be examined in table 1, reproduced from *Beyond High School*.[13]

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[8] See Bailey, 1966; Berdie and Hood, 1965; Berelson and Steiner, 1964; Colorado State University, 1966; Coster, 1963; Dubin, 1958; Grinder, 1967; Gross, 1959; Hollingshead and Redlich, 1958; Hyman, 1956; Jennings and Niemi, 1968; Kahl, 1953; Knupfer, 1947; and Strodtbeck, *et al.*, 1957.

[9] R. E. Grinder, *A Study of the Influences of the Father's Job and Social Goals of Youth*. Final Report. Madison: Univ. of Wisconsin, 1967.

[10] G. Knupfer, "Portrait of the Underdog," *Public Opinion Quarterly*, 1947, Vol. 11, p. 114.

[11] See J. W. Trent, *Catholics In College: Religious Commitment and the Intellectual Life*. Chicago: University of Chicago Press, 1967, where this argument is developed in the chapter on the church-family-self system.

[12] J. W. Trent and L. L. Medsker, *op. cit.*

TABLE 1.—*Parental Encouragement as Reported by Subjects of High Academic Aptitude, by Socioeconomic Status (SES), in Percentages**

SES and Encouragement	(N)	Persisters	Withdrawals	Nonattenders	Chi Square
High					
Strong encouragement	(295)	80	16	4	67.70**
Other	(73)	41	26	33	
Middle					
Strong	(606)	61	27	12	247.70**
Other	(436)	23	20	57	
Low					
Strong	(101)	50	28	22	67.56**
Other	(132)	8	21	71	

* Source: Trent and Medsker (1968)

** $p < .01$

More will be said about the influence of school counselors and teachers on the decision to attend college later. In the meantime, the evidence is that even the action of school personnel is not independent of family values. Others have found a significant relationship between parental values and educational aspiration, decisionmaking and achievement.[14]

Research of this kind has led Rehberg to arrive at what he considers a provisional model that posits elements that could be anticipated from the above review.[15] These include the conditions that parents' education is a partial determinant of the family's socioeconomic status, that parents' education and social status influence adolescent educational expectations through the intervening variable of parents' pressure and independent of it, and that there is a negative relationship between family size and parental encouragement for their children to continue their education. The last instance may result from the inability of parents of large families to give adequate individual attention to their children apart from socioeconomic status and values associated with large families.

In addition to parental expectations and encouragement, there are other characteristics of parents associated with college attendance among their children. The greater interaction between college-bound children and their parents has already been noted. The college bound, compared with the nonattenders in the 1968 Trent-Medsker sample, also reported their parents to be more ambitious, energetic, intellectual, loving, and orderly—traits presumably conducive to an achievement-oriented, supportive family climate. In contrast, the students who decided against college were more likely to report their parents to be easy-going and quick tempered.

The implication of this last finding is that parents of noncollege youths show some greater tendency toward negative traits, at least in terms of indifference and display of temper. This negativism may have bearing on the findings from several independent studies of students who not only failed to enter college but also failed to complete high school.[16] Forty-three percent of the parents of the dropouts had been involved with crime or delinquency. One half of them encouraged their children to leave school or were indifferent to the decision, even though 52 percent of the parents were unskilled or unemployed and one-third of them were on welfare. Perhaps most significant in terms of the influence of parents as models is the fact that approximately 80 percent of the parents of the dropouts had themselves dropped out of school.

Peer and Parent

The work of Coleman and the research contained in Newcomb and Wilson's volume provide ample evidence of the peer group's influence on the adolescent's and young adult's overall behavior.[17] Coleman concludes that for adolescents, at least, the peers' influence prevails over that of parents. This, however, is questionable.

As in other research, the high school seniors in the Trent-Medsker sample who were planning on college reported the same plans for most of their friends. On looking back on their lives 4 years later, however, they reported their parents to be far more helpful and influential than anyone else, including friends and teachers. This was true of both those who had entered college and those who had not, but it was especially true of the college attenders. Drabick, who examined this issue among adolescents in reference to educational and occupational decisions specifically, found that youths largely saw their basic decisions as their own, but parents as the most important external influence. [18] This was also evident in Bordua's cross tabulations which included religious background and socioeconomic status as well as parental stress, conceived as factors independently related to college aspirations.[19]

Some research indicates that the relative influence of peers and parents on decisionmaking depends upon the situation. Solomon presented a sample of adolescents with four hypothetical situations.[20] The first asked how they would respond to them if they were "real" situations, and the second asked whether parents, peers, their own values, or their impulses would be most influential in their decisions. Three of the situations had to do with social behavior (going steady, breaking a friendship and attending a party or visiting an aunt). Values and impulses were the most influential in deciding about these situations. The fourth situation (copying) was the only situation that had to do with academic (and moral) behavior and in this case parents were most influential.

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[13] Interested readers should refer to commentary about this table in *Beyond High School: A Psycho-Sociological Study of 10,000 High School Graduates*. Chapter 9, pp. 243–245.

[14] See Berdie and Hood, 1965; Bloom, 1964; Jaffe and Adams, 1964; Levenson, 1965; Little, 1959; Sexton, 1965; Slocum, 1956; and Werts, 1967.

[15] R. A. Rehberg, *Selected Determinants of Adolescent Educational Expectations*. Reports No. BR-5-0217-OP-12 and OP-12, Eugene: University of Oregon, 1966.

[16] See Maryland State Department of Education, 1963; and Pearl, 1962.

[17] J. S. Coleman, *The Adolescent Society*. New York: Free Press, 1961, and T. M. Newcomb and E. K. Wilson, eds., *College Peer Groups*. Chicago: Aldine, 1966.

[18] L. W. Drabick, *Perceived Sources of Influence Upon Occupational and Educational Expectations*, Educational Research Report. Raleigh: North Carolina State University, 1967.

[19] D. J. Bordua, "Educational Aspirations and Parental Stress on College," *Social Forces*, 1960, Vol. 38, pp. 262–269.

[20] D. Solomon, "Adolescents' Decisions: A Comparison of Influence From Parents With That From Other Sources," *Marriage and Family Living*, 1961, Vol. 23, pp. 393–395.

Brittain conducted a similar study, presenting his sample with 12 situations through his "Cross-Pressure Test." [21] Most of the items had to do with jobs, activities, conduct (again moral), and dress. Peer influence dominated on only three items—the two items on dress and the one having to do with which course to take (perhaps having more to do with the decision to be in class with friends than serious educational decisions). Parents were of the most influence on the one situation having to do with academic achievement (selection for honors) as they were on all other items except one (which boy to date steadily) where influence was equal.

Simpson's 1962 study of adolescents' occupational decisions suggests a key to the relative influence of parent and peer.[22] Parents had a greater effect on decisionmaking, though differences were not reported as statistically significant. More important, perhaps, is that aspirations were highest under the influence of both parents and peers, and lowest when neither were influential. In other words, the effect is cumulative, a notion that will be discussed further in the final section of this study. The fact is that parents initiate values and provide the environmental setting where friends of comparable socioeconomic status and concomitant values will be chosen. Berelson and Steiner summarize the logical result on the basis of Kahl's 1953 research to the effect that normally the individual's peer group "reinforces the classifying attributes and tendencies of the parental family." [23]

Religious Subculture

An important correlate of family status is religious background. It is particularly important in this context since religious background has a demonstrated effect on educational attitudes and activities and is intermixed with and also independent of socioeconomic status and academic aptitude. Only a brief summary example of aspects of religious influence on educational behavior follows.[24]

For many decades, Jews have been highly over-represented in college and Catholics and fundamentalist Protestants under-represented. The representation of white, "middle" Protestants has constantly fallen between these two extremes. These differences may in part be accounted for by values espoused by different ethnic groups, as indicated in the next section on minority students. There is no doubt that socioeconomic status has also been related to these differences. Catholics, for example, largely of immigrant background, have been heavily over-represented at the lower levels of socioeconomic status.

Yet, more has been involved in the relative lack of college attendance among Catholics than ethnic background or socioeconomic status. Until very recently Catholics were under-represented among mostly Anglo-Saxon youths studied who were planning to attend college and who actually did attend, even when controlling for socioeconomic status.[25] Much of this phenomenon can be attributed to a close church-family-self system where religious values perpetrated by the church have prevailed over those of the family and the individual. The values of the church have, in effect, tended towards anti-intellectualism and the discouragement of higher education.

There is now evidence that in the last few years Catholics are as likely as Caucasian Protestants to attend college, and aspire to postgraduate education.[26] Greeley also concludes that Catholics show the same intellectual interests and attainments as non-Catholics on the basis of a survey and past graduate follow-ups of a sample of graduates originally studied as seniors in selective colleges.[27] An abundance of evidence based on validated instruments matched against observed behavior refutes this position, however.[28] A concern here is that the belief system that is imposed on the individual, whether religious or otherwise, can have definite bearing on the decision he makes about his education, and therefore warrants consideration.

Minority Status

Belief systems and corresponding attitudes and values are also manifest as unique to certain minority groups. The result is that factors associated with low socioeconomic status are expanded and heightened among minority groups that are heavily represented at the lower levels of socioeconomic status. Part of the phenomenon may result from cultural differences and part of it from lack of early development of basic communication skills and reading ability specifically, perpetrated by poorly educated, bilingual families.

Bilingualism, of course, is not the only handicap of children from families where the middle class English employed in schools is not spoken. It is a significant one, however. Bilingualism, low socioeconomic status and low achievement seem to occur together, probably in a cumulative fashion.[29]

School-related learning environments are lacking in these families. Inevitably, then, children from these families begin their formal education with lower academic aptitude test scores compared with other children. And apparently the situation is not remedied but instead is reinforced. Even on so-called "culture-fair" tests these scores drop with age, especially in verbal ability, numerical facility, verbal reasoning and space conceptualization.[30] This may be occasioned partly by the fact that a test may decrease in predictive power as it approaches "culture fairness" in as much as schools require for their successful students certain class-linked values as well as conventional academic aptitude as such.[31]

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[21] C. V. Brittain, "Adolescent Choices and Parent-Peer Cross Pressures," *American Sociological Review*, 1963, Vol. 28, pp. 385–391.

[22] R. L. Simpson, "Parental Influence, Anticipatory Socialization and Social Mobility," *American Sociological Review*, 1962, Vol. 27, pp. 517–522.

[23] B. Berelson and G. A. Steiner, *Human Behavior: An Inventory of Scientific Findings*. New York: Harcourt, Brace, 1964, p. 469. See also J. A. Kahl, "Educational and Occupaiontal Aspirations of 'Common Man' Boys," *Harvard Educational Review*, 1953, Vol. 23, pp. 186–203.

[24] For a beginning review of this subject, see Herberg, 1960; Lenski, 1963; and Trent, 1967.

[25] J. W. Trent, *Catholics in College, op. cit.*

[26] See Creager *et al.*, 1969, and Tillery, 1969.

[27] A. M. Greeley, "Continuation In Research On The 'Religious Factor,'" *American Journal of Sociology*, 1969, Vol. 75, pp. 355–359. Also see his *Religion and Careers*. New York: Sheed and Ward, 1963.

[28] See Tillery, 1969, and Trent, 1967.

[29] College of Education, Arizona State University, *Investigation of Mental Retardation and Pseudomental Retardation in Relation to Bilingual and Subcultural Factors*. Tempe: Arizona State University, 1960.

[30] G. S. Lesser, *et al.*, *Mental Abilities of Children in Different Social and Cultural Groups*. Cooperative Research Project No. 1635, Washington, D.C.: United States Government Printing Office, 1963.

[31] V. H. Noll, "Relation of Scores on Davis-Eells Games to Socioeconomic Status, Intelligence Test Results, and School Achievement," *Educational and Psychological Measurement*, 1960, Vol. 20, pp. 119–130.

Serious questions, therefore, exist about traditional admissions criteria in higher education when applied to minority youths.[32] On the other hand, motivational and attitudinal characteristics deserve much more attention for their relevance to educational expectations and achievements. The following are several cases in point.

1. Although the nature of the scale is not sufficiently explained, Fricke derived an Achiever Personality scale from his Opinion, Attitude, and Interest Survey (OAIS) which he concluded predicts college grades about as well as academic aptitude tests without correlating with these tests, meaning that they indicate academic motivation and conscientiousness.[33] These elements are related to academic "success" but are not measured by aptitude tests. Milles and O'Connor's 1969 research indicates that these elements may be more related to academic success than measured academic aptitude among black students.[34] They found that the Achiever Personality scale was a better predictor of college grade point average than SAT scores or high school rank for Opportunity Award students at the University of Michigan, 85 percent of whom were Negro.

2. Epps found that among northern and southern Negro students, socioeconomic status was strongly related to educational expectations and that self-concept of ability was strongly related both to grades and amount of expected education.[35] Socioeconomic status and self-concept were correlated but also, without the benefit of further analysis, indicated independent contributions to expected education. Caplin also found high self-concept and level of aspiration related to achievement among black students.[36]

3. Katz's review of research led him to conclude that black and Caucasian students do not differ in desired educational goals, but rather in expectation of attaining these goals.[37] Such research consistently indicates that family values are related to educational aspirations and subsequent decisions to lead to the realization of those aspirations. Katz questions whether this is dependent upon the presence of the father, but much of the research, including that of Bond and Roberts and Nichols, indicates that intact families and positive father models have a great bearing in this context. [38] If this is true, Popenoe's report that only 44 percent of the children of central city families with incomes "below the poverty level" live with both of their parents suggests that the decisions that many minority students make about their education will be circumscribed for some time to come.[39]

In the meantime, the internality, self-concept, and sense of personal control that is emerging as critical to aspirations of minority students must be reviewed in relation to the prevalent value of minority families, and the maintenance of these values. This is true since the evidence is that the values of the minority parents may inhibit the development of positive self-image and sense of control in some respects. Strodtbeck's research of over a decade ago remains pertinent to this point.[40]

Mexican-American and Anglo 10th graders in economically depressed areas of Texas indicated they had similarly high educational goals, but the Anglo youths clearly had higher educational expectations than the Mexican-Americans.[41] Research of Schwartz and also Gordon and Schwartz (*et al.*), which compared Anglo and Mexican-American 9th and 12th graders from 13 schools in the Los Angeles area, showed that a majority of both groups aspired to formal education after high school.[42] However, nearly twice the proportion of Anglo students compared with Mexican-Americans desired to continue their education. Moreover, among those students who desired post high school education, the Anglos tended toward 4-year institutions and subsequent graduate work, whereas the Mexican-Americans tended toward trade school and 2-year institutions.

Although the Anglo and Mexican-American students in the Gordon-Schwartz research were from the same neighborhoods, the academic achievement level of the Anglos was average, but that of the Mexican-Americans was low. Desired occupational levels of the two groups were similar when controlling for level of achievement. Differences in educational aspiration, however, were reduced but not eliminated.

No doubt the language problems and other handicaps mentioned regarding minority students enter into this finding. But it is just as likely that patterns of family values discussed above are also relevant. In examining the values of the students and their parents, Gordon and Schwartz found that the dominant cultural values of the Mexican-Americans did not include some orientations which are highly related to achievement in middle class American society, including willingness to exercise control over others, independence from parental control, an optimistic orientation toward the future, a generalized confidence in mankind, and a nonrational orientation toward activity. According to Schwartz:

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[32] See Clark and Plotkin, 1963; Dyer, 1968; and Green, 1969.

[33] B. G. Fricke, *OAIS Handbook*. Ann Arbor, Michigan: OAIS Testing Program, 1965.

[34] D. M. Miller and P. O'Connor, "Achiever Personality and Academic Success Among Disadvantaged College Students," *Journal of Social Issues*, Vol. 25, No. 3, 1969, pp. 103–116.

[35] E. G. Epps, "Correlates of Academic Achievement Among Northern and Southern Urban Negro Students," *Journal of Social Issues*, 1969, Vol. 25, pp. 55–70.

[36] M. D. Caplin, "Self-concept, Level of Aspiration and Academic Achievement," *Journal of Negro Education*, 1968, Vol. 37, pp. 435–439.

[37] I. Katz, "A Critique of Personality Approaches to Negro Performance, With Research Suggestions," *Journal of Social Issues*, 1969, Vol. 25, pp. 13–27. For further discussion of the student's personal control over his own rewards, see Gurin *et al.*, 1969, and Rotter, 1966.

[38] H. M. Bond, *A Study of Factors Involved in the Identification and Encouragement of Unusual Academic Talent Among Underprivileged Children*. Report No. BR–S–0859 and CRP–458. Atlanta: Atlanta University, 1967, and R. J. Roberts and R. C. Nichols, *Participants in the National Achievement Scholarship Program for Negroes*. Report No. NMSC–R–R–2, No. 2, Evanston: National Merit Scholarship Corporation, 1966.

[39] P. Popenoe, ed., "Research Notes," *Family Life*, 1969, Vol. 29, No. 6, p. 5.

[40] F. L. Strodtbeck, "Family Interaction, Values and Achievement," in D. C. McClelland, *et al.*, eds., *Talent and Society*, Princeton: D. Van Nostrand, 1958.

[41] R. Z. Juarez and W. P. Kurlesky, *Ethnic Group Identity and Orientations Toward Educational Attainment: A Comparison of Mexican-American and Anglo Boys*. Report No. SRP 3-61, SRP H–2611, College Station: Agricultural Experiment Station, Texas A and M University, 1968.

[42] A. J. Schwartz, *Comparative Values and Achievement of Mexican-American and Anglo Pupils*. CSE Report No. 37, Los Angeles: Center for the Study of Evaluation, University of California, 1969 and also C. W. Gordon *et al.*, *Educational Achievement and Aspirations of Mexican-American Youth in a Metropolitan Context*. Los Angeles: Center for the Study of Evaluation, University of California, 1968. The interested reader is referred to a critique of the Gordon *et al.* research (Hernandez, 1970).

> One can conclude from this analysis that as opportunities are presented to Mexican-American youth for some acculturation of Anglo values, so are opportunities presented for greater educational achievement. While the deliberate modification of value orientation through indoctrination is and should be beyond the ken of any public educational system, such modification which occurs through normal social processes is not.
>
> With the firm conviction that some form of cultural adaptation to the larger society by Mexican-American youngsters is necessary if the already apparent grim consequences of educational failure are to be avoided, this study recommends that educational systems make a formal effort to structure the social context of education so that achievement values which may not be derived from the home can be developed at school, through informal social processes. Through deliberate encouragement and through manipulation of attendance boundaries, school officials must be permitted and, indeed, required to develop school environments which are most positive for academic achievement and for values which support it.[43]

This conclusion raises questions about the influence of the general environment on educational decisionmaking, and the impact of schools as an important part of that environment. It also raises questions about whether the schools should deal with minority students in terms of their values and environment, rather than exclusively in the values and modes of the middle class environment presented by the school.

The General Environment: Community and Schools

An individual's family and friends are not the only factors that influence or condition how he views his life and the related decisions he makes about his life. He is also influenced by the experience, opportunities and constraints that are provided by the communities in which he lives and the schools he attends in these communities. Available research indicates that a full understanding of the process of college-going should include the environmental factors of community and school.

Community Differences in College Attendance

The Trent-Medsker cross-country sample of high school seniors referred to earlier was drawn from 17 communities. College entrance in the semester following high school graduation varied by community from approximately 25 to 65 percent. The many community elements that may have contributed to this wide range of proportions of students who decided upon college are not clear. One element, however, is evident. The presence of a public college and the particular kind of college was associated with college attendance. The highest rate of college entrance occurred among students who graduated from high school in communities with a junior college (53 percent); the lowest rate in communities with an extension center (34 percent) or no college at all (33 percent). Forty-seven percent of the students from communities with a State college entered college right after high school graduation.[44] In addition, more students from every ability and socioeconomic level entered college in communities with a junior college than in communities with any other type of college.

Berdie and Hood also found that the location of students within the one State of Minnesota made a difference in college attendance.[45] This was particularly true in reference to the location of colleges. Fenske's 1966 study of graduating seniors from 10 Wisconsin communities indicated that students of a high level of both academic aptitude and socioeconomic status generally entered college regardless of the community. Although he concluded that local availability of a college was relatively uninfluential upon the decision to attend college, he also concluded that:

> Local availability of a college was crucial to plans for college attendance, however, for many graduates (especially girls) with combinations of characteristics positively associated with such plans, e.g., graduates of high scholastic ability but whose parents had only a grade school education.[46]

The yields of college-going graduates were much more associated with community differences determined by such characteristics as the educational level of parents and the proportions of fathers in various levels of occupations. This would appear to be nothing other than the potent variable of socioeconomic status, and just as a family can be characterized on this variable, so can a community, the composition of many families. Harp and Morton have furnished additional evidence of this sort.[47] In their analysis controlling for sex and educational aspirations, they found a significant difference in college attendance rates for two township environments characterized as high and low in professional occupations.

This does not necessarily imply merely a repetition of the finding that children from families of high socioeconomic status usually decide upon college. It may well be that communities characterized by a relatively high level of socioeconomic status set values and standards that influence even those students in those communities who are not themselves at a high level of socioeconomic status. Data on minority students in integrated classrooms, to be discussed later, indicate that this is a strong possibility.

The socioeconomic makeup and college availability of a community together apparently form a strong environmental press on college attendance. Some of this no doubt also has to do with the location of a community, at least in respect to the great difference in rate of college attendance of high school graduates between rural and urban communities. A few exceptions are to be found, partly due to the inconsistent nature of the research.[48] The general consensus of extensive literature is, however, that rural compared with urban youth have a high rate of withdrawal from high school and a low rate of college attendance. This condition has been found to exist regardless of academic aptitude, financial resources or socioeconomic status generally.[49]

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[43] A. J. Schwartz, *op cit.*, pp. 53-54.

[44] L. L. Medsker and J. W. Trent, *The Influence of Different Types of Public Higher Institutions on College Attendance From Varying Socioeconomic and Ability Levels.* Cooperative Research Project No. 438, Berkeley: Center for the Study of Higher Education, University of California, 1965.

[45] R. F. Berdie and A. B. Hood, *Decisions For Tomorrow.* Minneapolis: University of Minnesota Press, 1965.

[46] R. H. Fenske, Association Between Local College Availability and Plans for College Attendance of Public High School Seniors With Differing Attributes and Socioeconomic Characteristics. Paper presented at the Annual Meeting of the American Educational Research Association, 1966.

[47] J. Harp and M. Morton, *Factors Associated With the College Attendance of Youth.* Reports No. HR-348 and BR-5-0146, Contract OEC-6-85-074, Ithaca: Cornell University, 1966.

[48] Kurlesky and Jacob, 1968, and Slocum, 1968.

[49] See Berdie and Hood, 1965; Christiansen, *et al.*, 1962; Coster, 1963; Lindstrom, 1968; and Sewell, 1963.

More specifically, rural youth compared with their urban peers have been found to be more unrealistic in their plans and disadvantaged in their achievement, exposure to achievement-oriented values, educational aspirations, personal goals, academic motivation, and preparation for college. This has also been found to be true regardless of curricular emphasis upon college preparation or grades earned.[50]

Some compensation has been noted depending upon the values of parents and proximity to large cities.[51] But generally, rural youths have been found to receive little encouragement to attend college either from their parents or schools.[52] And, in spite of the fact that fewer farming opportunities will be available in the future and the fact that these opportunities often will require a high level of skills, inadequate counseling is indicated in rural high schools by lack of knowledge of occupational training needs of rural youths.[53] This brings up the whole question of the influence of the school on students' decisions about their education.

The Press of School

Differences in school environments can affect students' educational decisions and often affect them negatively. At least a minority of students (approximately 18 percent) across the country have reported that high school teachers represented their greatest source of help.[54] A smaller proportion considered their teachers as the greatest source of influence in their lives.[55] Students who decided against college in least proportion considered teachers to be helpful or influential. Parrish and Weldy cast additional doubts on the pervasiveness of the positive influence of schools. They concluded that schools offer little encouragement toward scholarship for students at large on the basis of their small survey, and that this situation is complicated by the fact that the values of society outside the school are not conducive to scholarship.[56]

The effect of schools on scholarly formation is likely to be even more mitigated when it pertains to "disadvantaged" students. Torrance concluded that disadvantaged students' lack of motivation toward the school results from many factors within the school.[57] These include indications that (1) these students have relatively little opportunity to use or communicate what they learn; (2) required tasks are either too difficult or too easy for them; (3) they have no opportunity to learn in ways that they prefer; and (4) they have no outlet for their own creative abilities or rewards for certain kinds of excellence.

A great part of the problem appears to be that the school is not sensitive enough to the nature, needs and differing experiences of its students, particularly those who are disadvantaged, but others as well. Indeed, Bowles and Slocum concluded on the basis of their survey of a random sample of juniors and seniors in 12 high schools that school experiences tended to reinforce the handicap to educational achievement and subsequent occupational mobility among low socioeconomic status students afflicted with relatively low self-images.[58] Relatively unsuccessful and uninteresting experiences aggravated the situation.

More needs to be learned about the effect of different school characteristics on the decisions of students in this context. Berdie and Hood noted differences in the characteristics of Minnesota schools, but found few effects.[59] The effects of certain aspects of the school environment are clearer, however. Rosenthal and Jacobson's pioneer study includes students, one-sixth of whom were Mexican-Americans, who were enrolled in a school in a lower class community of a medium-size city.[60] At the beginning of the school year the students were randomly assigned to 18 teachers who were told which of their students could be expected to show "dramatic intellectual growth" during the coming year on the basis of a test administered the previous year. The "special" students were chosen randomly so that their extraordinary potential was only in the minds of the teachers. Experimental-control pre- and post-test comparisons revealed significantly greater intellectual growth on the several variables considered, such as verbal and reasoning IQ and reading comprehension for the "special" students. Strong support was given the hypothesis that a teacher's expectation for a student's behavior "could come to serve a self-fulfilling prophecy." Obviously more information is needed about this kind of phenomenon, particularly if it is found replicable, for the sake of the educational benefits implied.

Considerable evidence suggests that, at the least, the close experience with new norms, values and expectations influences educational decisions and performance. Sarri and Vinten, for example, concluded on the basis of their study of several Michigan elementary and high schools that student "malperformance" was the result of the interaction of both student and school characteristics; that middle class students are substantially more likely to be placed in a college preparatory program which, in turn, positively affects performance; that pupil careers are influenced by social class-linked motivations, capabilities and skills; and that when the school prejudges the student, it may generate the very malperformance it seeks to eliminate.[61]

Presenting the student with new norms, and, by implication, new roles and expectations may have the opposite effect. This would seem likely, anyway, if moving from lower socioeconomic to middle class school settings results in the encounter with and subsequent assimilation or internalization of new norms. Indications are that this is the case. Veroff and Peele, for example, found from pre- and post-test comparisons that Negro boys who moved from predominantly black to predominantly white schools gained significantly in autonomous achievement motivation within a year.[62]

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[50] See Elder, 1963; Lindstrom, 1968; Sanders, Osborne and Greene, 1955.

[51] See Horner, *et al.*, 1967; and Lindstrom, 1968.

[52] J. F. Shill, *Educational Aspirations, Expectations, and Abilities of Rural Male High School Seniors in Mississippi*. Washington, D.C.: Office of Education, 1968.

[53] See Elder, 1963; and Lindstrom, 1968.

[54] J. W. Trent and L. L. Medsker, *op. cit.*

[55] J. W. Trent, *In and Out of College: Processes and Patterns of College Attendance*. San Francisco: Jossey-Bass, in press.

[56] K. Parrish and G. R. Weldy, "Good Scholarship: Do Students Really Care?" *Clearing House*, 1969, Vol. 43, pp. 275–279.

[57] E. P. Torrance, "Motivating the Creatively Gifted Among Economically and Culturally Disadvantaged Children," in J. C. Gowan and G. D. Demos, eds., *The Disadvantaged and Potential Dropout*. New York: Thomas, 1966.

[58] R. T. Bowles and W. L. Slocum, *Social Characteristics of High School Students Planning to Pursue Post High School Vocational Training*. Washington, D.C.: Research Coordinating Unit for Vocational Education, June 1968.

[59] R. F. Berdie and A. B. Hood, *op. cit.*

[60] R. Rosenthal and L. Jacobson, *Pygmalion in the Classroom—Teacher Expectations and Pupils' Intellectual Development*. New York: Holt, Rinehart and Winston, 1968.

[61] R. C. Sarri and R. D. Vinten, School Goals, Social Class, and Pupil Careers. Paper presented at the 44th annual meeting of the American Orthopsychiatric Association, 1967.

Caplin found significant differences between students in integrated and de facto segregated schools in school related self-concept and aspiration, although not in self-concept and aspirations having to do with personal and social qualities.[63] During the course of two consecutive summer Upward Bound sessions, Hunt and Hardt found significant, positive changes in attitudes and motivations such as feelings of self-esteem and internal control among both white and black students compared with control groups which did not participate in the program.[64] Unlike the white students, however, the Negroes declined in grades over the 18-month period of the study.

Some of these inconsistencies may have to do with the degree, duration and form of interaction in new settings. Thus, several studies indicate that black students change positively both in verbal achievement as well as in attitude and aspiration when they are in classes with a majority of white students, but not when they are in classes with a minority of white students even though the school is technically integrated.[65] The importance of interaction of students with their school to educational attitudes and decisions is also suggested by the fact that involvement with school activities has been found to be predictive of post high school education for both minority students and high school graduates at large.[66]

Once again, the implication is that the individual makes his decisions in reference to the norms and related behavior he is exposed to and particularly with which he identifies. This is an important implication in terms of social-psychological theory and research on decisionmaking. Deutsch, for instance, draws upon the research to indicate that the group decision method produces more change in behavior than other methods.[67] This does not simply mean group discussion, which apparently has no more impact on decisionmaking than the lecture method or the public identification of individuals' decisions. Rather, to change group-rooted attitudes, it is frequently necessary to change the group to which the individual belongs.

Clearly, educational attitudes and consequent decisions are group-rooted—in the family, in the peer group and in the school, all influenced by and part of the socioeconomic environment. If these groups inhibit educational aspirations, then it may be appropriate for the individual who could profit from higher education to participate in groups that would encourage interest in education. Thus, the minority or otherwise educationally disadvantaged student stands to achieve in education more and seek it more when interacting with members of groups where educational achievement is valued more. And this is precisely what is apparent in studies of minority students who participate in middle class integrated classrooms.

This process is most effective where the group is accepting of the individual.[68] The individual is more inclined to accept group goals when the goal-setting procedures involve individual participation in selecting the goals through discussion. Applied to educational terms, it is apparent that the individual is more likely to decide upon higher education when he participates with close peers who are making this decision. This would not be likely, however, for the minority student who enrolls in an integrated school but who ends up in segregated classrooms which provide the basic groups in the school.

Even the integrated, accepting classroom may not be sufficient to deal with the negative-minded or undecisive student with the potential for higher education. The tendency is for groups to ridicule members who deviate much from the group's norms or standards. Thus, a college-minded group of adolescents would be expected to question a peer who is not planning upon college also. But this criticism of the individual's decision may have little effect if he is part of a larger group (a socioeconomic environment of family and neighborhood) that does not favor education. Perhaps this is one of the reasons why Upward Bound programs and even totally integrated schools have not had any more effect than they have, granting that they have had some effect. In therapeutic settings, this problem has been reduced by insulating the individual from all but the group where norms are desirable.[69] Both questions of feasibility and ethics would have to be raised about this procedure in a school setting, however. Perhaps the solution is to do more to integrate the primal group, beginning with parents, that does not encourage education with the school that does. As a matter of fact, certain counseling procedures, noted later, have attempted this very thing, as have other educational programs.

Counseling for College

Surveys across the country and within individual communities provide ample evidence that students do not as a rule perceive their teachers and especially their counselors as very helpful or influential regarding their educational and vocational decisions and activities.[70] This perception may be an accurate one for a large number of students. To date, many counselors lack the training and/or talent for effective counseling, and most of them, regardless of background or talent, still do not have sufficient time to provide adequate counseling for individual students. Under the circumstances the effectiveness of counseling is bound to be limited, and perceived as such by students. Unfortunately, this is particularly true of those students not inclined toward college. These are the students who also receive the least help and encouragement from their parents, and are, therefore, in most need of parent (particularly father) surrogates at school.[71]

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[62] J. Veroff and S. Peele, "Initial Effects of Desegregation on the Achievement Motivation of Negro Elementary School Children," *Journal of Social Issues*, 1969, Vol. 25, pp. 71–91.

[63] M. D. Caplin, *op. cit.*

[64] D. E. Hunt and R. H. Hardt, "The Effect of Upward Bound Programs on the Attitudes, Motivation, and Academic Achievement of Negro Students," *Journal of Social Issues*, 1969, Vol. 25, pp. 117–129.

[65] See Katz, 1969; McPartland, 1969.

[66] See Selinger, 1968; Trent, in press.

[67] M. Deutsch, "Field Theory in Social Psychology," in G. Lindzey, ed., *Handbook of Social Psychology*. Reading, Mass: Addison-Wesley, 1959.

[68] H. H. Kelley and J. W. Thibaut, "Experimental Studies of Group Problem Solving and Process," in G. Lindzey, ed., *Handbook of Social Psychology, ibid.*

[69] See H. W. Riecken and G. C. Homans, "Psychological Aspects of Social Structure," in G. Lindzey, ed., *Handbook of Social Psychology, ibid.*

[70] See, for example, Delavan, 1966; Trent and Medsker, 1968.

At the same time, no doubt many students would receive more counseling help if they did more to seek it, and many students are probably helped and influenced by counselors much more than they realize. Moreover, although the research on counseling effectiveness is full of contradictions, there are indications that certain counseling programs, if more widespread, would have the potential for equally widespread positive influence on students' educational and career decisions.

Yabroff developed a set of probability tables based on the experiences of former high school students in his school district.[72] The tables indicated the likelihood of pursuing successfully certain post high school vocational and educational activities given such characteristics as a specific grade point average or academic aptitude score. Three peer groups were then selected for study. One received training in using the experience tables to determine the probability of their succeeding at a certain college or in a certain profession given their known traits. The second group had no exposure to the tables, but did receive instruction in decisionmaking using conventional materials. The third group, the control group, received no further treatment at all. The group which received instruction in decisionmaking based on the experience or probability tables scored significantly higher than the other groups at each of three levels of academic aptitude in: (1) knowledge about the process of decisionmaking; (2) awareness of available and feasible high school and college alternatives; and (3) knowledge of the probabilities involved in these alternatives in the manner noted above.

Here is a case of providing students with relevant information about themselves in reference to the vocational and educational pursuits of others like themselves, and then encouraging them to interpret the information in relation to their own decisionmaking in group settings. Not only is the individual thereby able to learn something about himself that he can apply to his life decisions, but he is able to try these decisions out on others through a group process. The whole procedure appears to be an effective, combined application of counseling and decision theory that contributes positively to the formation of educational plans and personal values.

In a more global experiment, 100 California high schools involved parents, students, and counselors in planning conferences where students' test scores were interpreted and future education and career plans were considered in relation to the students' ability.[73] Evaluation was not so precise as it was in Yabroff's project, but apparently the conferences which were highly attended have led to a more realistic view of students, a stimulation of interest in career planning and improvement of parents' understanding and cooperation.

A comparable program included group counseling and home visits for an "experimental" group of 721 seventh graders in three Muskegon, Michigan junior high schools.[74] When compared with a control group which did not participate in the program, the experimental group students showed increased interest in educational and vocational planning and developed more awareness of the need for early economic planning. There was no evidence, however, that the families involved contributed more to that planning or to an environment more conducive to such development.

Not all attempts to promote optimum decisionmaking through the counseling process have met with the considerable or even qualified success manifest in the preceding projects. Krumboltz reports such an instance that involved 225 juniors in four high schools.[75] Counseling procedures derived from research in social learning were used to assist students in learning how to make plans and decisions more effectively. Student social models characterized by varying degrees of athletic, social and academic success were presented to the "treatment" groups. The primary method of presentation was an audiotape through which the peer social models verbally demonstrated the behaviors the project sought to promote. Evaluation of the effect of the treatment was based on the frequency and variety of such information-seeking behavior as writing to a college for entrance information. No differences were found between the experimental group and a non-treatment control group on this basis.

Effectiveness of counseling on decisionmaking, of course, depends not just on conceptualization, but the duration, quality and form of the process. Assessment of its effectiveness also depends upon the basic assumptions made about its process, and the criteria used to measure its effectiveness. Counseling for college or any aspect of personal development and attainment is a complex process not amenable to simplistic assumptions.

Evidence shows that college planning for most students—particularly those who are most likely to persist in college—is the result of attitude formation and educational decisions that take place over an extended period of time, beginning long before high school and certainly long before the senior year of high school. College Days or Nights, as such, will have essentially no effect on basic decisions about college attendance. For this purpose College Days would be most effective in the early elementary years, and then they would provide only a minimal part of the counseling needed. College Days at best serve as a limited information source for high school students already interested in college.

Short-term counseling has proved effective in increasing motivation among underachievers and/or those prone toward attrition.[76] One of the reasons for the effectiveness of some short-term counseling may be the relation of technique to the particular needs and traits of the individuals seeking counseling such as providing unstructured group counseling experience for highly anxious underachievers and structured experiences for low anxious underachievers.[77] But even counseling techniques customized to individual differences prove to have effects that are only temporary.[78]

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[71] See Betz, *et al.*, 1968; Grinder, 1967; Malinson, 1968; Trent and Medsker, 1968; and Trent, in press.

[72] W. W. Yabroff, *An Experiment in Teaching Decision-making.* Report No. RB–9, Sacramento: California State Department of Education, September 1964.

[73] W. H. McCreary, *Student-Parent Counselor Conferences, An Aid in Educational Planning.* Sacramento: California State Department of Education, 1965.

[74] Muskegon Guidance Project, *The Effect of Additional Counseling on the Able Student's Vocational and Educational Planning.* Muskegon, Michigan: Muskegon Public Schools, 1965.

[75] J. D. Krumboltz, *et al.*, *A Study to Determine How Counseling Procedures Can Be Used to Help Students Make Decisions and Plans More Effectively.* Report Nos. GRP–S–246 and BR–5–8128, Contract OEC–5–10–363, Palo Alto: Stanford University, 1966.

[76] See Arkava, 1969; Rose, 1965; and Rose and Elton, 1966.

The problem of counseling for optimum decisionmaking is more likely to be severe and prolonged when it deals with values and traits rooted in cultural and socioeconomic status. Therefore, perhaps it is normal that an 8-week summer session designed to provide realistic college experience for Upward Bound students such as that described by Herson has no discernible effects.[79] Perhaps it is also normal that more extensive programs such as that described by Klitgaard have the opposite result.[80] Thirty out of 35 Mexican-Americans who were counseled in an unstructured group over a 4 year period entered college after high school graduation and have acted as models stimulating others to do the same. Klitgaard attributes this success to the group identity and mutual support that developed over this period, verifying further the important role of primary groups in decisionmaking previously discussed.

In a broad view, probably the great bulk of counseling does little to influence young people's decisions regarding college. Clearly, though, proper counseling programs can, and some do. What Green has to say about black students in this context may have much wider relevancy.[81] As he sees it, serious questions arise about the application of traditional admissions criteria to minority youth. Motivational and attitudinal characteristics which have been ignored must now be considered, particularly since colleges have found that "high-risk" students can succeed with proper tutoring and counseling. Again, the emphasis might well be placed on that word "proper."

Personal Traits

Whatever the complex, interrelated internal and external sources of influence on educational decisionmaking, they end up as manifest in the individual's personal traits of aptitudes, attitudes, values and general behavior, beginning with the primary trait of intelligence or academic aptitude.

Academic Aptitude

Without a doubt, two of the most important determinants of college attendance are intelligence or academic aptitude and socioeconomic status. This is evident from this and a number of other reviews.[82] But just as it is essentially impossible to consider these variables apart from each other in relation to college attendance, neither do they together or independently represent the sole determinants of college attendance. The interrelationships are probably as important as their individual influences on the decision to attend college, if not more so.

As indicated earlier, actual and derived college attendance occurs with greater frequency at the higher levels of socioeconomic status and academic aptitude; so, too, does achievement motivation. A direct positive correlation exists between academic aptitude and socioeconomic status, and the two variables together are more predictive of college attendance than either one separately.[83] But the importance of one over the other variable is not clear concerning the decision to attend college. Studies include findings ranging from socioeconomic status being twice as important as ability, to ability being three times as important as socioeconomic status.

The great upsurge of plans to attend college and actual enrollment compared with the phenomenon in past years is particularly noticeable among students at the upper ability levels, regardless of socioeconomic status or, in some instances, even regardless of ethnic background.[84] College attendance continues to vary greatly by region, but at least an estimated 80 percent of students nationally at the top quarter of their high school class enter college. Over 90 percent of students at both the upper quarter of ability and socioeconomic status have been found to enter college. Still, great slippage of college attendance occurs among talented youths, and this begins in the early years of school.[85]

Motivational Determinants

Presumably motivational factors account for much of this slippage, although they cannot be extricated from ability and socioeconomic status any more than these two latter factors can be completely separated from each other. Havighurst and Neugarten argue, as a matter of fact, that "The most important factor in determining who will go to college is that of motivation, the individual's desire for a college education." [86]

This recalls the fact that the strong desire to attend college expressed by a large sample of high school seniors across the country was the single variable most related to actual attendance.[87] It does not, however, account for the reason for this motivation. Havighurst and Neugarten consider that motivation to attend college arises from four major factors: (1) need for achievement; (2) identification with persons who have gone to college or done well in school; (3) social pressure, especially from family, peers and school; and (4) intrinsic pleasure in learning.[88]

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[77] R. D. Brown, "Effects of Structured and Unstructured Group Counseling With High- and Low-Anxious College Underachievers," *Journal of Counseling Psychology*, 1969, Vol. 16, pp. 209–214.

[78] S. H. Gilbreath, "Appropriate and Inappropriate Group Counseling With Academic Underachievers," *Journal of Counseling Psychology*, 1968, Vol. 15, pp. 506–511.

[79] P. F. Herson, "An Assessment of Changes in Achievement Motivation Among Upward Bound Participants at the University of Maryland," *Journal of Negro Education*, 1968, Vol. 37, pp. 383–391.

[80] G. C. Klitgaard, "A Gap Is Bridged: Successful Group Counseling of College Potential Mexican-Americans," *Journal of Secondary Education*, 1969, Vol. 44, No. 2, pp. 55–57.

[81] R. L. Green, "The Black Quest for Higher Education: An Admissions Dilemma," *Personnel and Guidance Journal*, 1969, Vol. 47, pp. 905–911.

[82] K. A. Feldman and T. M. Newcomb, *The Impact of College on Students*. San Francisco: Jossey-Bass, 1969.

[83] Berdie and Hood, 1965; Feldman and Newcomb, 1969; Flanagan, *et al.*, 1964; Havighurst and Neugarten, 1967; Kahl, 1953; Medsker and Trent, 1965; Noll, 1960; Rogoff, 1963; Sewell and Shah, 1967; and Tillery, 1969a, b.

[84] Bowles and Slocum, 1967; Flanagan, *et al.*, 1964; Havighurst and Neugarten, 1967; and Tillery, 1969.

[85] D. S. Bridgman, "Where the Loss of Talent Occurs and Why," in College Entrance Examination Board, ed., *The Search for Talent, 7: College Admissions.* New York: College Entrance Examination Board, 1960, pp. 30–45.

[86] R. J. Havighurst and B. L. Neugarten, *Society and Education.* 3d Edition, Boston: Allyn and Bacon, 1967, p. 99.

[87] J. W. Trent and L. L. Medsker, *op. cit.*

[88] R. J. Havighurst and B. L. Neugarten, *op. cit.*

The Meaning of Motivation

The term "motivation" has various meanings in the literature. Therefore, ideally an examination of a comprehensive conceptualization of motivation should be developed before more specific attention is given to the dynamics of academic motivation.

A sufficient description of such a conceptualization, however, would constitute yet another treatise. For the immediate purposes, motivation is viewed classically as a need or desire accompanied by the intention to attain a goal that will satisfy the need. It is an internal state that controls behavior, determining the strength and specificity of action in the face of presumed alternatives.[89] Expectancy is distinct from motive in that it is an anticipation that an act or behavior will lead to a particular consequence. The strength of expectancy depends on the subjective probability of anticipated consequences. Incentive is also distinct from motive in as much as it constitutes the relative attractiveness of a reward or goal, the strength of which depends on the difficulty of attainment. Motives are relatively stable and general characteristics of the personality; expectancies and incentives are variables that depend more on the ongoing experience of environmental cues.[90] In actual practice, the three variables are interrelated, and this is certainly true regarding motivation toward academic achievement.

The important point of this discussion is that the decision to go to college is likely the result of a motivational need of long standing. The expectancies of the consequences of going to college, the incentives that college represents prompt the act of entering and persisting in college. But the incentive and expectancies—the act of college entrance itself—are the reflections of more basic motivation. They are the manifestation of established, consistent behavior. The motivations behind the behavior are the result of selective rewards, inculcated values, and interactions from earliest childhood and therefore are highly stable and resistant to change.

This suggests why remedial programs designed to stimulate motivation to achieve academically often result in such moderate or negligible success. It also suggests why students who are not sure about their college plans and who decide to enter college only late in high school or after their graduation usually end up withdrawing from college. Although the research does not clearly distinguish motive from incentive or expectation, it does do much to substantiate Havighurst and Neugarten's conclusion that it is basic motivation, above all, that determines the decision to go to college. It also gives some indication of how this motivation is formed and manifested.

Motivational Determinants

Motivational elements underlying the decision to achieve academically and enter college frequently appear in conjunction with other variables. They may also be the result of the early socioeconomic and especially familial environment. Yet apparently motivation provides the catalytic force behind the decision to attend college, as indicated in two major studies.

The main objective of Coleman's nationwide, landmark study was to assess the quality of educational opportunity in the United States.[91] A secondary but very relevant objective was to assess the motivational-personality factors of students related to school achievement. Findings pertinent to this context are summarized here.

1. Negroes and other minority groups showed a much lower sense of control of their environment than white students. White students showed two to three times higher internal control responses on items such as "Good luck is more important than hard work for success."

2. Students' attitudes accounted for the largest proportion of the variance in school achievement, followed by socioeconomic status.

3. The educational background and aspirations of fellow students appeared to be beneficial to achievement, independent of a given student's own background. The achievement level of fellow students also had affected the achievement of a given student.

4. Positive self-concept, positive attitude toward school, interest in school and internal locus of control were predictive of academic achievement, with attitudes and background accounting for approximately 16 and 28 percent of the total variance for black and white students, respectively.

5. Self-concept and achievement were most highly related for students of high socioeconomic status. Locus of control and achievement were most closely related for "disadvantaged" students.

6. Parents' desire for their children's further education constituted the greatest unique contribution to positive self-concept and internal locus of control.

The implications of the findings are that family background is very important to the motivation to achieve, and this influence does not diminish over time. The social context, particularly the peer group, is also important, while school characteristics account for very little of the variance in school achievement. Attitudes, however, are "extremely highly related to achievement." Out of the composite of variables examined, self-reported aspirations and motivation, sense of realism, self-esteem and sense of control over the environment comprised student attitudes indicative of motivation and correlated behavior and values, and which accounted for more variation in achievement than any other variable in the survey.

Consistent with expectations, these attitudes were largely family rooted, even if measured as distinct from the family. As such, they were scarcely subject to modification in the school. In Coleman's words:

> Taking all these results together, one implication stands out above all: That school brings little influence to bear on a child's achievement that is independent of his background and general social context; and that this very lack of an independent effect means that the inequalities imposed on children by their home, neighborhood, and peer environment are carried along to become the inequalities with which they confront adult life at the end of school.[92]

The research of Tillery and his associates delineates the process of decisionmaking that results in college attendance.[93] Among the pertinent findings are the following:

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[89] See English and English, 1961; and Krech and Crutchfield, 1962.

[90] See D.C. McClelland, ed., *Studies in Motivation*. New York: Appleton-Century-Crofts, 1955 and also his *The Achieving Society*. Princeton: Van Nostrand, 1961.

[91] J. S. Coleman, *Equality of Educational Opportunity*. Washington, D.C.: U.S. Government Printing Office, 1966.

[92] *Ibid.*, p. 325.

1. High academic and vocational aspirations greatly distinguished those who were college-bound and those who were not. Most of those who entered college did so right after high school. Those who entered 4-year colleges manifested the highest aspirations in high school, and indicated early motivation by their early decision to enter college.

2. Those who aspired to enter college indicated their greater motivation by such behavior as talking about college much more, by seeking advice about college from parents, counselors and teachers, by exhibiting greater self-confidence that they would achieve in college, by considering college an important factor in their lives, and by expressing greater interest in ideas and personal autonomy—traits conducive to persistence in college.[94]

3. Further indication of the relative seriousness of motivation for the college-bound was the fact that they were considerably more likely to see college as an opportunity to get ahead, in contrast to the noncollege students who were more likely to see college as a place to have fun before settling down or as a place to behave in ways that would cause their parents' disapproval.

4. Both academic aptitude and socioeconomic status were related to level of aspiration and actual attendance in college, but the economic factor as such was not a key element in college plans.

5. Parents were perceived as the greatest source of help, followed by counselors, particularly among the college-bound.

6. Counselors reportedly gave the greatest part of their attention to high aspiring, high socioeconomic and high achieving students. Students of low aspirations tended to have a negative view of counselors and in large proportion reported being discouraged by their parents.

Once again, the convex of the data focuses on aspects of family-rooted motivation as underlying the decision to attend college. When the disposition toward college is present, the school reinforces it, but when it is lacking, it appears to ignore it. To all appearances, a syndrome of motivational elements is pivotal to the decision, and parents are primary in initiating that syndrome. Therefore, it is relevant to consider how parents inculcate this form of achievement motivation.

Formation of Achievement Motivation

The research does not agree on all particulars, but the consensus is that motivation to attend college begins very early in life, and even the specific decision to attend a college generally is made before the junior year of high school.

Grant, when comparing the post high school plans of Utah high school seniors in the fall and spring, found them to be more realistic just prior to graduation.[95] Tillery found that approximately half of his four-State sample of high school students reported they decided to enter college late in high school, although there was a tendency for students who entered 4-year colleges and universities to decide upon college early in life.[96] The largest proportion of students in the Trent-Medsker cross-country sample, however, who went on to enter and persist in college reported as seniors in high school that they made their plans before their sophomore year of high school.

Interview data from students representative of this sample indicated that the college-bound had essentially taken it for granted they would enter college from childhood, rather than having made some major, specific decision to enter college as adolescents. The observations of Douvan and Kaye were also that upper and upper middle class students do not really make a decision about college attendance.[97] Rather, it is assumed. Their conclusion was that they will not attend college only if they are highly motivated not to attend. Seron's review of relevant literature also reveals that the motivation to enter college generally begins before high school.[98]

Indeed, both capacity for academic achievement and motivation to achieve are observable from the earliest years of school. Kagan and Moss concluded from their longitudinal study from "birth to maturity" that they could make "fairly accurate guesses about intensity of strivings for intellectual competence in high school and college from the child's behavior or tested intelligence in the third and fourth grades."[99] The degree of achievement behavior of 10-year olds formed good predictions of adult achievement. Three factors contributed to the "stability" of this behavior: (1) approval or acceptance of achievement by the social environment; (2) "mastery behavior" leading to status, parental or parental surrogate acceptance, material reward, personal satisfaction, vocational satisfaction and feelings of adequacy and competence; and (3) the educational level of the subjects' families.

Similarly, the Hoffmans concluded from their review of the research that intellectual tendencies become fairly well consolidated by elementary school age, that measured intellectual capacity is capable of change and that these changes "may be related to the degree of independence and achievement motivation fostered by the early family environment."[1] Berdie and Hood concluded that influences governing post high school plans are identifiable before the ninth grade.[2] More specifically, Shaw and McCuen identified underachieving behavior that would limit college plans among bright students as early as the third grade.[3]

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[93] See Tillery, 1969a, 1969b, 1969c; Tillery, Donovan and Sherman, 1969; and Tillery, Sherman, and Donovan, 1968. This project is still under way. The findings are based on random samples of 9th and 11th graders in four States (representing different regions and higher education systems) who are being followed up on a longitudinal basis.

[94] J. W. Trent and L. L. Medsker, *op. cit.*

[95] C. W. Grant, "A Followup Study of Spring 1966, High School Graduates In The State of Utah," *Personnel and Guidance Journal*, 1968, Vol. 47, pp. 157–162.

[96] D. Tillery, "School to College: Distribution and Differentiation of Youth," Berkeley: Center for Research and Development in Higher Education, University of California, 1969b.

[97] E. Douvan and C. Kaye, "Motivational Factors in College Entrance," in N. Sanford, ed., *The American College*. New York: Wiley, 1962, pp. 199–224.

[98] M. S. Seron, *Analysis of Factors Which Determine Choice of College Among Urban, Suburban, and Rural High School Students.* Los Angeles: University of California, 1967.

[99] J. Kagan and H. A. Moss, *Birth to Maturity: A Study in Psychological Development*. New York: Wiley, 1962, p. 152.

[1] L. W. Hoffman and M. L. Hoffman, *Child Development Research*. Vol. 2. New York: Russell Sage Foundation, 1966, p. 281.

[2] R. F. Berdie and A. B. Hood, *op. cit.*

[3] M. C. Shaw and J. T. McCuen, "The Onset of Academic Underachievement in Bright Children," *Journal of Educational Psychology*, 1960, Vol. 51, pp. 103–108.

There is a time factor evident in the college decisionmaking and it does not pertain only to the specific decision to enter college or performance supporting that decision. It may also pertain to the time of one's birth relative to his siblings. Although the research is at times inconsistent on the subject and does not manifest impressive relationships, first-born children generally have been found to be higher in academic performance and motivation than later-born children. Bradley and Sanborn found a significant over-representation of first-borns among ninth grade students identified as superior.[4] Crittenden found first-borns significantly higher on Iowa Tests of Basic Skills scores and teacher grades, especially among females and siblings close in age.[5] At first reading these findings do not appear compatible with Berelson and Steiner's conclusion that there is a consistent increase in average intelligence from first-born to last-born within families.[6] Perhaps the performance of first-borns examined as groups exceeds what might be expected since, as Berelson and Steiner explain, for the general population late-born children actually have a lower average measured intelligence because larger families are more prevalent among groups with lower measured intelligence.

Beyond the matter of achievement and aptitude is that of attitude. Combining the results of three samples of subjects in three studies, Sampson concluded that first-borns have a higher need for achievement.[7] The Hoffmans' review led to the conclusion that achievement motivation, striving for excellence and the attainment of eminence are significantly higher among first-born children, especially within the "academic intellectual sphere."[8] Once again, the socioeconomic factor enters into the field with the suggestion that parents who ascribe to intellectual values transmit them to their children, and that this may occur more the more they can give undivided attention to their children.

Considerable research permits much more to be said about the transmission of values that contribute to academic motivation and the related decision to enter college.[9] The following is by way of synthesis and summary.

1. As noted earlier, socioeconomic status interacts with family characteristics in the promulgation of achievement motivation. Children from middle class homes seem to learn to value praise by adults (their parents) early. This value system transfers to the school setting and contributes greatly to middle class children's success there, and may still be operating when they reach college. Lower class children, on the other hand, typically experience adult approval in the home only rarely, and as a result do not respond to teacher praise which for them has little meaning or value. Recent evidence indicates that lower socioeconomic status parents desire more education for their children than in the past, but they do not sufficiently nourish the motives and skills necessary for their children to compete with their higher status peers. Working class children respond less consistently than middle class children to achievement cues, abstract standards, and verbal rewards.

2. Serious, intellectual goals are atypical reasons for college attendance, especially among lower class students. A more common reason for college attendance is the desire for both social and vocational mobility. College can have a high incentive value for students motivated strongly toward independence and mobility. Men phrase college aspirations in terms of vocational aspirations, although for women, college is more an end in itself.

3. Teachers, counselors, unrelated adults, peers, close friends, older siblings, and their peers and especially parents influence the decision to attend college. This influence often occurs by the encouragement of values and attitudes not directly related to college but highly conducive to college attendance. An example is the encouragement of a pervasive achievement motivation.

4. Parental demand and reward for achievement is a marked middle class characteristic which follows a predictable pattern. The earlier that parents press for achievement among their children, the more they press for their children's independence in achievement and the more they reward this behavior with physical affection, the greater their children's need for achievement.

5. A number of antecedents conducive to achievement motivation or needs are consistently evident and include style of familial interaction and the delegation of responsibility, apart from demand for achievement and encouragement of independence as such. Rapport with parents is important, especially with the mother and when the father is present as a respected head of the household.

6. The middle class familial syndrome for achievement orientation includes as important elements autonomous parents who are close to their children and accepting of them while at the same time pressing them toward achievement, independence and self-responsibility. The authoritarian rather than autonomous syndrome has the opposite effect. Authoritarian parents, especially authoritarian, coercive fathers tend to have children who, compared with children of parents who value personal autonomy, are less motivated to achieve and to continue their education.

7. There are a number of characteristics that distinguish authoritarian from autonomous families which may help to explain differences in achievement motivation among their children. Authoritarian parents are prone to discipline their children harshly, to give them their love conditionally and to encourage their dependency through a hierarchical family structure. Autonomous parents tend to control their families democratically, to show consideration and consistency in rule enforcement, to share decisionmaking, to explain the reasons for their decisions, to train their children for self-reliance and to accept the gradual detachment of their children from them.

8. Data suggest that autonomous, achievement-oriented families have a direct effect on their children's decision to attend college in as much as college-bound youths compared with others are more independent, are more self-reliant and resist authority more. This is true particularly for men, and even

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[4] R. W. Bradley and M. P. Sanborn, "Ordinal Position of High School Students Identified By Their Teachers As Superior," *Journal of Educational Psychology,* 1969, Vol. 60, pp. 41–45.

[5] E. A. Crittenden, *et al.,* "School Achievement of First- and Second-Born Siblings," *Child Development,* 1968, Vol. 39, pp. 1223–1228.

[6] B. Berelson and G. A. Steiner, *op. cit.*

[7] E. E. Sampson, "Birth Order, Need Achievement, and Conformity," *Journal of Abnormal and Social Psychology,* 1962, Vol. 64, pp. 155–159.

[8] L. W. Hoffman and M. L. Hoffman, *op. cit.*

[9] Berelson and Steiner, 1964; Brackbill and Jack, 1964; Crandall, 1963; Douvan and Kaye, 1962; Hoffman and Hoffman, 1966; Kagan and Moss, 1962; McCandless, 1961; Reisman, 1962; Sechrest, 1962; Stinchcombe, 1969; and Terrell *et al.,* 1959.

Table 2.—*Standard Mean Scores on Selected Omnibus Personality Inventory Scales for College and Noncollege Groups**

	Complexity		Lack of Anxiety		Nonauthoritarianism		Social Maturity		Thinking Introversion	
	Men	**Women**	**Men**	**Women**	**Men**	**Women**	**Men**	**Women**	**Men**	**Women**
College										
Number	2318	1888	2318	1888	2318	1888	2318	1888	2318	1888
Mean	50.6	52.0	51.0	51.0	51.2	52.4	51.2	52.5	52.5	53.5
Noncollege										
Number	2065	2995	2043	2983	2065	2994	2065	2995	2065	2995
Mean	49.5	48.7	49.0	49.6	48.4	48.6	48.8	48.5	47.3	47.8

* Data derived from Medsker and Trent (1965).

more particularly for lower class men—who may be making special efforts to assimilate the values of their achievement-oriented, middle class reference groups.

9. The behavior of authoritarian families encourages dependency, and that of autonomous parents, self-esteem and self-confidence. The traits of self-esteem and self-confidence are related to achievement in school, positive interpersonal relations and competency in general. Correlated leadership, extracurricular participation, sociability and freedom from conflict with authority, as noted earlier, are also related to positive socialization and academic motivation and accomplishment. This important syndrome of traits of emotional acceptance, academic motivation, perceived competence and social power determines the child's place in class. This syndrome is observable and consistent from the early years of school—when its observation is important since it will also ultimately determine the child's position in society as an adult.

Additional Personality Traits

The unique environmental press on youths who end up deciding upon college that has been noted previously is bound to be manifest in their personality and behavior. This has been indicated by their greater motivation to achieve, their greater self-esteem and greater striving for independence. It is also manifest in personality traits or self-concepts related to disposition toward learning and the larger social environment outside of family and close peer groups.

In a previous study that formed the base line for the Trent-Medsker cross-country longitudinal sample referred to earlier, Medsker and Trent administered five preliminary scales from the Omnibus Personality Inventory[10] to their subjects while high school seniors with these results: (1) for both sexes there were small but significant differences in intellectual curiosity, openness to the novel, and tolerance for ambiguity as measured by the Complexity scale in favor of the college-bound compared with their peers who did not enter college the fall term after high school; (2) the college-bound manifested less measured anxiety; (3) the college-bound were considerably more autonomous, objective, open-minded, culturally sophisticated, and intellectual in their thinking as measured by the correlated Nonauthoritarianism and Social Maturity scales; (4) above all, the college-bound manifested a greater preference for abstract, reflective thinking, especially in the areas of philosophy, literature, art, and music, as measured by the Thinking Introversion scale; (5) statistically significant differences between the two groups on these highly reliable and validated scales generally prevailed when controlling for level of academic aptitude and socioeconomic status, although there was some interaction among the variables;[11] (6) the Thinking Introversion, Complexity, Nonauthoritarianism, and Social Maturity scales (measuring intellectual interest, tolerance for ambiguity and open-minded, autonomous thinking) were subsequently found to be part of the select variables that formed two discriminant functions that predicted patterns of college attendance (or nonattendance) over a 4-year period.[12]

These data appear summarily in table 2. Graphs of the data appear in figures 1 and 2 to facilitate a comparison of the measured dispositions of the college-bound and their noncollege peers for each sex. The standard scores included are based on the entire distribution of the scores of the high school seniors so that for each scale the total mean score is 50 and the standard deviation is 10.

These attitudinal differences could have been anticipated from much of the previous discussion on the press of the socioeconomic environment and related determinants on academic motivation. Two studies, however, do not altogether verify results of this kind. Flanagan and Cooley obtained a wide array of attitudinal and particularly cognitive variables from a large national sample of high school students through their Project Talent.[13] In a one-year followup study they conducted a series of discriminant analyses to predict various post high school educational groups: those who attended 4-year colleges; nursing schools; junior colleges; business schools; trade schools; and those who did not attend college at all a year following their high school graduation.

For both men and women tested in the 11th grade, information scales and especially such ability scales as mathematics and reading comprehension distinguished the followup groups more than all other sets of variables. Interest scales included physical science, public service, literary-linguistic, artistic, sports, business management and mechanical-technical scales. The temperament scales were sociability, social sensitivity, impulsiveness, vigor, calmness, tidiness, culture, leadership, self-confidence and mature personality. The interest scales distinguished among the post high school criterion groups for the men, but not the temperament scales. The temperament scales of leadership, sociability and especially mature per-

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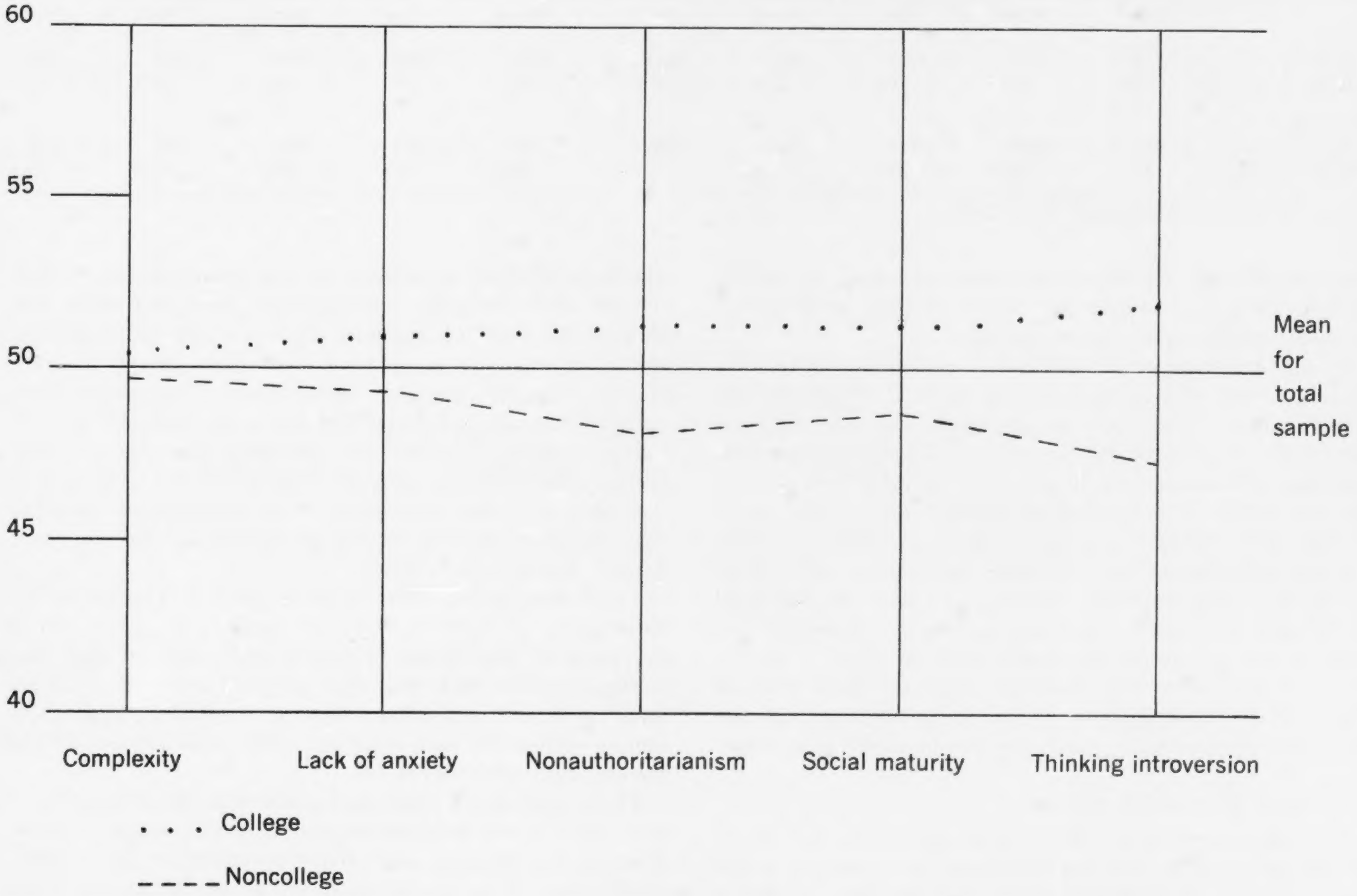
[10] P. Heist and G. Yorge, *Omnibus Personality Inventory Manual.* New York: Psychological Corporation, 1968.

[11] See J. W. Trent and L. L. Medsker, *op. cit.*

[12] See J. W. Trent, *In and Out of College, op. cit.*

[13] J. C. Flanagan and W. W. Cooley, *Project Talent: One-Year Follow-up Studies.* Cooperative Research Project No. 2333, Pittsburgh: University of Pittsburgh, 1966.

Figure 1. Profile of Men's Standard Mean Scores on Selected Omnibus Personality Inventory Scales for College and Noncollege Groups.



Source: Medsker and Trent, 1965.

sonality did contribute to the two discriminant functions that distinguished the criterion groups for the women, but the interest scales generally received much greater weight on the two discriminant functions.

The temperament scales distinguished among groups of men attending different types of private, 4-year colleges even though they did not among the post high school criterion groups. But even in the analyses of men attending different types of private institutions, other variables had greater discriminating power. Perhaps these findings are in part the results of lack of relevancy of such variables as tidiness, vigor and calmness. Perhaps they are also the result of the very low reliability, lack of independence, and absence of validation of the scales.[14]

Dole and Weiss studied a sample of University of Hawaii freshmen through a multivariate design and concluded that motivational factors were moderately associated with performance measures, although not to the point of being able to make clinical predictions or administrative decisions about individuals.[15] Some problems of interpretation may exist in their study, however. For example, the authors might well have found a greater association between motivation and college entrance and performance had they studied their subjects before they actually entered a university.

Two additional personal traits involved in decisions about college concern goal directedness and personal adjustment. Baird investigated a large sample of college-bound youths who were tested by the American College Testing Program (ACT) in 1964 and 1965, and found that they gave greatest importance first to vocational training (51 percent) and second, to the development of intellectual abilities (34 percent).[16] Vocational training might be considered to have been of prime importance to 58 percent of the students when including the 7 percent who foremost desired a higher income. A small percentage of students chose as their most important goal to become a cultured person, enjoy life, develop their personality,

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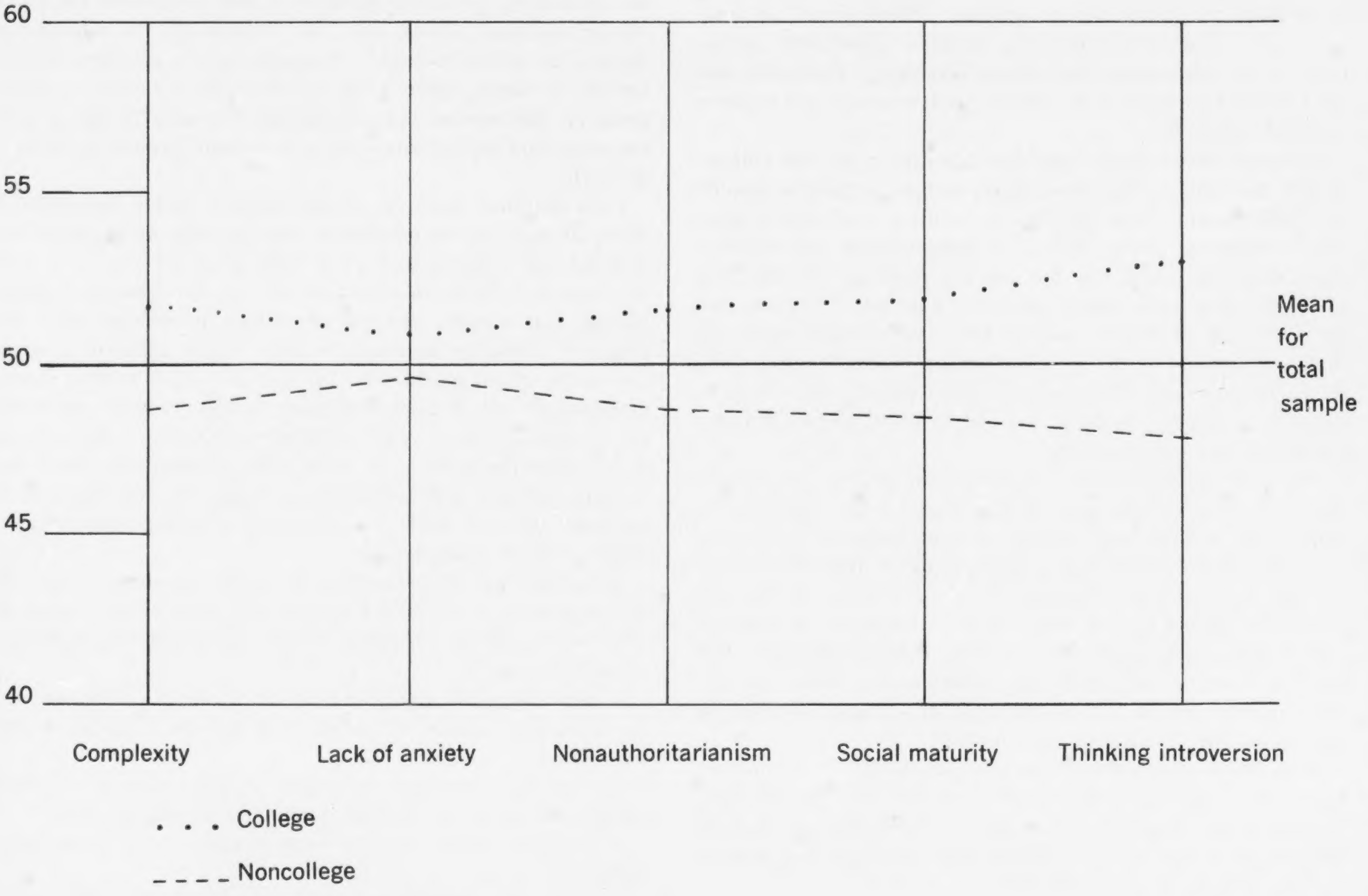
[14] See J. C. Flanagan, *et al. The American High School Student.* Final Report for Cooperative Research Project No. 635, Pittsburgh: Project Talent Office, University of Pittsburgh, 1964.

[15] A. A. Dole and J. D. Weiss, "Correlates of the Reported Determinants of College Attendance," *Journal of Counseling Psychology*, 1968, Vol. 15, pp. 451–458.

[16] L. L. Baird, *The Education Goals of College-Bound Youth.* ACT Research Report No. 19. Iowa City: American College Testing Program, 1967a.

Figure 2. Profile of Women's Standard Mean Scores on Selected Omnibus Personality Inventory Scales for College and Noncollege Groups.



Source: Medsker and Trent, 1965.

to develop a satisfying philosophy, to make a desirable marriage, or to develop moral standards.

The vocationally oriented students had about an average level of academic aptitude measured by ACT, and came from families with slightly lower incomes than most of the groups. Their nonacademic achievements were average. They were practitioner-oriented in curricular and vocational choice, and were most likely to have decided upon a major. They also frequently planned on some post graduate education. The students that emphasized higher income frequently came from low-income and rural backgrounds. They had the lowest grades in school and were low on the ACT and in nonacademic achievement. They were most likely to be undecided about their field, but were practically oriented in what choices they made. Few of them planned on post graduate education.

The third of the sample that had as a primary goal the developing of their mind had high grades in school and high academic aptitude scores. They showed leadership abilities more than others, were influenced by the quality and reputation of their schools and chose many vocations but centered on science majors and the role of researchers more frequently than any of the other groups. They commonly planned on some post graduate education.

There is evidence of interaction between goals, personal behavior and college performance. For example, Reed found for several hundred freshmen women that field of interest, the establishment of high future goals and warm interpersonal relations were conducive to persistence in college.[17] Also perceptions of the meaningfulness of daily college tasks were positively related to overachievement. More specifically, liberal arts students low in warmth in interpersonal relations and low in future goals had a 55 percent chance of remaining in college and a 41 percent chance of withdrawing. Professional students high in warm interpersonal relations and future goals had an 82 percent chance of persistence and a 10 percent chance of attrition.

O'Shea, like Berdie and Hood, also found an association of good social relationships with achievement, presumably including the act of entering college.[18] O'Shea, however, did not observe an association of interpersonal relations with achievement among students after they entered college. Some of these relationships may simply follow from having a well adjusted or undistracted personality in general. Thus, Centi has demonstrated a positive relationship between adjustment (measured by the Minnesota Multiphase Personality Inventory and the College Inventory of Academic Achievement) and achievement in college.[19]

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[17] H. B. Reed, "College Students' Motivations Related to Voluntary Dropout and Underachievement," *Journal of Educational Research*, 1968, Vol. 9, pp. 412–416.

[18] A. J. O'Shea, "Peer Relationships and Male Academic Achievement: A Review and Suggested Clarification," *Personnel and Guidance Journal*, 1969, Vol. 47, pp. 417–423.

As noted above, there was also a tendency for the college-bound students in the cross-country sample originally studied by Medsker and Trent in 1965 to manifest less anxiety than their noncollege peers. The data indicate that high achievement motivation and low test anxiety result in the selection of challenging tasks which preclude guaranteed success, but not some risk of failure.[20] Low achievement motivation and high test anxiety result in a narrowing of challenging tasks, relatively safer, psychologically, in terms of difficulty. In part, risk-taking and achievement have been found to be positively correlated in a school setting. [21]

Achievement motivation, therefore, including the motivation to attend college, may in the final analysis include the disposition to withstand certain types of anxiety. In light of the above review, there may be the possibility that the individual has to experience a certain level of self-esteem and self-confidence before he can afford to take the kind of risks and consequent anxiety presumed in academic involvement. Perhaps he must be sufficiently free from anxiety about his own status before he can assume the type of anxiety that may be part of striving to achieve academically.

This notion further suggests the complexity of the personality. There are many aspects of the personality, and no doubt the interaction of these personality traits influence the specific decision to attend college. We should now move to an identification of some of these interactions.

III. THE MULTIVARIATE PROCESS OF DECISIONMAKING

Clearly, the decision to enter college is the cumulative result of the influence of a large number of interacting variables over an extended period of time. Even for the college-bound, the choice of a particular college is influenced by such complex factors as intellectual emphasis, practicality, the advice of others and social emphasis.[22] The process of deciding upon college, though much influenced by socioeconomic press, is seldom primarily a matter of financial status. Influencing elements are frequently psychological and often irrational as well.[23]

Multidimensional Determinants of Decisionmaking

Recent efforts have manifested the possibility of identifying and measuring discrete motivational and personality variables related to school achievement, and presumably, the subsequent decision to attend college.[24] Considering the complex, multivariate dynamics underlying the decision to attend college, however, the current multidimensional measurements of performance and aspirations seem to be a more productive line of research.

Data obtained from the Trent-Medsker 5-year longitudinal study of high school graduates were recently analyzed to determine the combination of a wide array of cognitive and attitudinal variables most associated with the decision to enter college and various patterns of college attendance after entrance.[25] Analyses centered on four major criterion groups: (1) high school graduates who did not enter college (nonattendance); (2) those who entered college but withdrew without completing the 4 years of college and without obtaining a degree (withdrawals); (3) those who persisted in college for 4 years but who did not obtain a degree in that time (continuers); and (4) those who obtained a baccalaureate degree within 4 years (completers).

In examining the behavioral dynamics of these groups, all variables were considered for their relevance to the theory of additive ascription proposed, which comprises the following propositions:

1. the values and attitudes held by people of college age are an important source of variation in college attendance and persistence;
2. there are three key influences on the formation of these values and attitudes: parents, peers, and school personnel;
3. parental values are the first, strongest, and most basic influence;
4. these three influences act in an additive manner, which also implies the possibility of subtraction when the sources of influence are not complementary.

Although the original purpose and design of the study precluded a direct test of the theory, the hypothesis was that the variables at hand would cluster together and relate to different patterns of college attendance in ways that would indicate the viability of the theory's propositions. In the process, the intent of the study was also to delineate the functioning of these variables in ways that would be of use to those responsible for assisting youths to make appropriate educational choices.

Analyses were conducted in three phases. The first phase began with factor analyses of the broad spectrum of variables used to determine the extent to which they clustered about categories of information having to do with family background, personality, attitudes about education, peer influences, school and college experience, academic aptitude, and socioeconomic status. The subjects were then scored on these factors and a discriminant analysis was made of the factor scores in an attempt to "predict" the criterion groups, that is, in order to classify accurately the primary patterns of college attendance on the basis of the factor scores. Phase two consisted of a replication of the factor analyses on an independent sample in order to assess the stability of the factor structure obtained originally. Phase three comprised a second discriminant analysis—this time of the raw data obtained from the subjects while they were still in high school. This was done out of the interest of improving upon the original analysis for purposes of developing a model applicable to high school students predictive of post high school educational achievement.

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[19] P. Centi, "Personality Factors Related to College Success," *Journal of Educational Research*, 1961-62, Vol. 55, pp. 187-188.

[20] See Berelson and Steiner, 1964, which uses Atkinson and Litwin's 1960 research as an example.

[21] A. E. Myers, "Risk Taking and Academic Success and Their Relation to an Objective Measure of Achievement Motivation," *Educational and Psychological Measurement*, 1965, Vol. 25, pp. 355-363.

[22] See J. M. Richards, Jr., and J. L. Holland, *A Factor Analysis of Student "Explanations" Of Their Choice Of College.* ACT Research Report No. 8, Iowa City: American College Testing Program, 1965.

[23] See Dinklage, 1966; and Kurland, 1967.

[24] See, for example, Austrin, 1965; Russell, 1969; and Satir, 1968-69.

[25] J. W. Trent, *In and Out of College, op. cit.*

In phase one of the research, 15 factors accounted for some 60 percent of the total variance. The five primary factors follow in the order that they contributed to the variance: (1) intellectual-educational orientation; (2) religious and social independence; (3) family atmosphere; (4) parental drive; and (5) source of help.

These factors were replicated when factor analyses were conducted on the college-bound sample exclusively, but in the second set of analyses, two additional factors placed among the first five: (1) students' use of extracurricular opportunities, including student personnel services and extracurricular activities; and (2) parental attitudes toward college, including the importance mothers and fathers placed both on college attendance and graduation from college.

A third factor analysis included variables obtained from the subjects prior to their high school graduation exclusively. The factorial structure remained similar in many ways, but five new factors emerged as primary, along with the personality variables noted in the other two factor analyses: (1) college orientation; (2) intellectual orientation; (3) socioeconomic status; (4) vocational choice; and (5) parental concern for plans.

The many variables found consistently related to educational achievement and aspiration in this research were not only reflected in the factor analyses enumerated above, but the interrelationships of the variables were also noted. Yet, since these data did not show the relative impact of the variables on college attendance, discriminant analyses were made of the factor scores. Scores on 10 factors obtained before high school graduation correctly predicted 60 percent of the subjects' subsequent criterion groups. These factors and the percentage of correct classifications they provided were: (1) college orientation, 52 percent; (2) socioeconomic status, 53 percent; (3) musical and extracurricular interests, 56 percent; (4) source of greatest help (parents most), 58 percent; (5) tolerance of ambiguity and freedom from anxiety (complexity and lack of anxiety scales), 58 percent; (6) parents' cultural interests (extent mother and father engaged in serious reading), 59 percent; (7) parental concern for plans, 59 percent; (8) number of nonacademic courses taken in high school, 60 percent; (9) intellectual orientation, 60 percent; and (10) vocational choice, 60 percent.

The discriminant analysis of the factor scores indicated the relevance to college attendance of measured motivation, socioeconomic status, involvement in school and cultural activities, personality characteristics, parental interaction, and preciseness of plans. But as predictive variables, the factor scores left too much margin for error. Therefore, discriminant analyses were made of 30 presumed predictive variables determined on the basis of the factor analyses and theory of additive ascription, but without regard to the factor scores themselves. Two discriminant functions resulted; the first accounted for approximately 60 percent of the variance among the four attendance pattern criterion groups and the second for about 30 percent of the variance. Variables with weights of .15 or more are listed by function in table 3. The corresponding distribution of the individual scores in discriminant space are shown in figure 3 by criterion groups.

TABLE 3.—*Contribution of Variables to Discriminant Functions One and Two**

Variable	Weight
First function (60%)	
Importance of college to the student	.51
Certainty of college plans	.36
Social Maturity	.25
Three best friends planning on college	.25
Degree of extracurricular activity	.22
Number of "solids" taken	.18
Socioeconomic status	.16
Second function (30%)	
Degree of extracurricular activity	.57
Importance of college	–.55
Complexity	–.34
Preference for a difficult college	.33
Extent of mother's serious reading	–.32
Extent discussed college plans with faculty	–.32
Thinking Introversion	.30
Number of friends planning on college	–.27
Importance of, getting ahead in life	–.24
Encouraged to enter college by faculty	–.19
Nonauthoritarianism	–.19

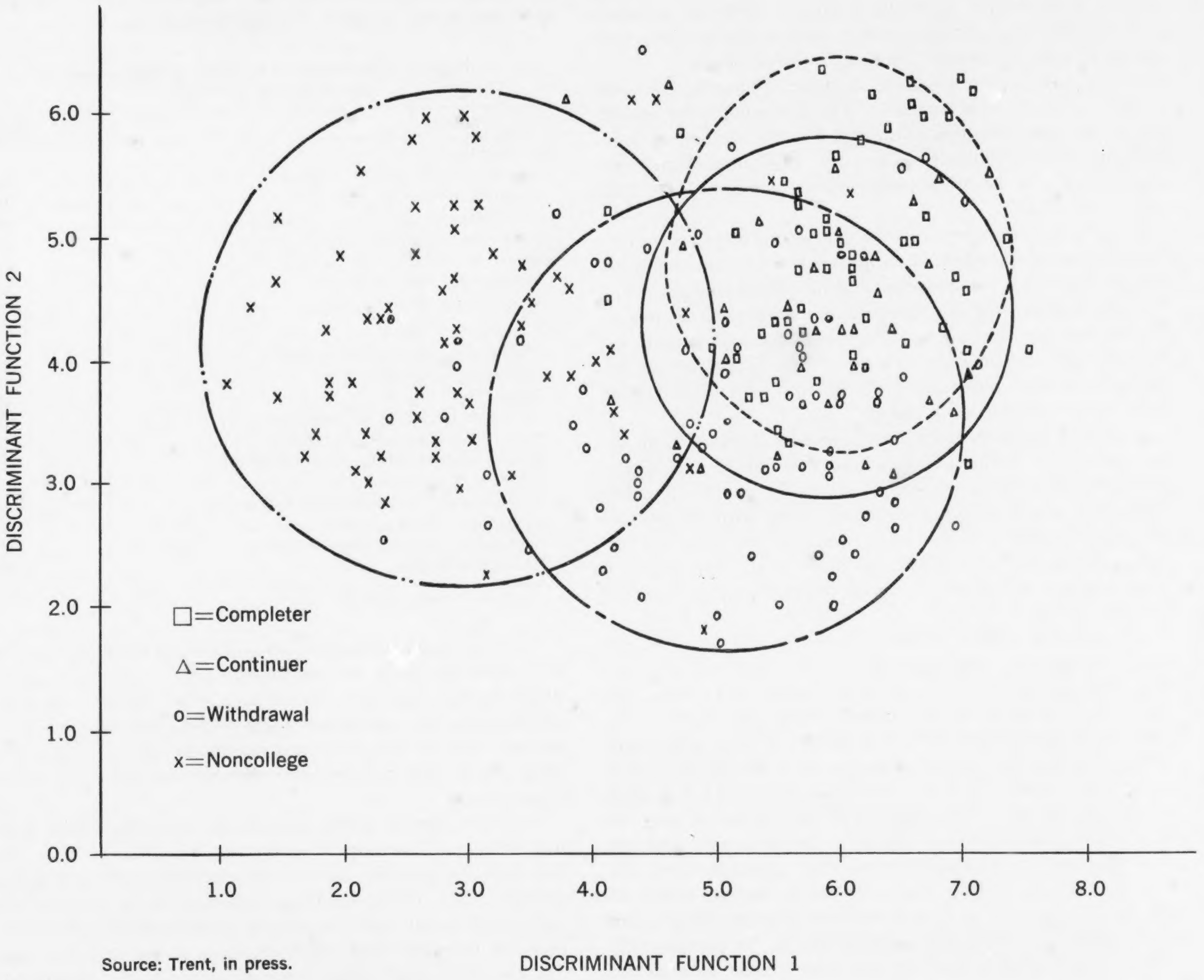
* SOURCE: Trent (in press)

The discriminant functions do not really greatly distinguish the completers from the continuers, but all other groups are quite distinct. There is almost no overlap between the nonattenders and the completers. The withdrawals place roughly midway between the nonattenders and completers, and at the same time occupy considerable space not shared by any of the other groups.

Technical details of the analyses are available in the original document. Important points to raise here are that the first function provides most of the discrimination among the groups. Thus, eventual college persisters can be predicted in contrast to nonattenders according to the following variables, listed in the order that they contribute to the first function: (1) the stress high school students place on the importance of attending college; (2) the certainty of their plans; (3) their degree of autonomy (in this case measured by the Social Maturity scale); (4) the extent to which their best friends plan upon college; (5) their participation in extracurricular activities; (6) the number of academic subjects they take in high school; and (7) their socioeconomic status determined by father's occupation.

A quite different type of person is characterized by high scores on the second function. Here is an individual unduly involved in extracurricular activities (perhaps to the detriment of his studies) who does not consider college very important, who, nevertheless, tends to choose a difficult college (perhaps unrealistically), who does not come from a cultured family as determined by mother's reading, who does not tend to discuss college with high school personnel, who does not tend to have many friends going to college, and who tends to be authoritarian rather than autonomous, while yet expressing interest in abstract ideas.

Figure 3. Distribution of Scores of Criterion Groups in Two-Dimensional Space Defined by Discriminant Functions 1 and 2.



Source: Trent, in press.

The exact meaning of extracurricular participation in the second function and the meaning of the positive contribution of Thinking Introversion to that function warrant further investigation. So too does the relative influence of parental encouragement in this context, since this variable had to be omitted because more than 15 percent of the noncollege sample failed to respond to this item. Otherwise, the variables represent anticipated predictions of the avoidance of college just as the variables in the first function represent anticipated predictions of the positive decision to attend college.

A special feature of these data is that the relative weights of the variables as predictors are known. Refinement of analyses of this kind, combined with comparable data that should be available from research such as that of Dole and Weiss, Flanagan and Cooley, and Tillery (all cited previously) should provide the basis for student characteristics models useful, if not essential, in dealing effectively with college decisionmaking, especially in the counseling situation.

Models for Decisionmaking

During the 5 years prior to 1970, strides were taken to develop models of decisionmaking and related research that have direct bearing on the process of deciding to attend college.[26] For purposes of discussion, the work of Gelatt, Clarke, and Seron will be referred to here, however.[27] Gelatt and his associates arrived at the following conclusions:

1. Decisionmaking, including educational-vocational deci-

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[26] See Dinklage, 1966; Ehling, 1966; Gribbons and Lohnes, 1966; and Yoesting and associates, 1968.

[27] See Clarke, Gelatt and Levine, 1965; Gelatt, 1966; Gelatt, 1962; Gelatt and Clarke, 1966; and Seron, 1967.

sionmaking, is a long-term sequential process. It is affected by the individual's progressive experiences in terms of: (a) what he does and how well he does it; (b) the condition under which he does it; and (c) how he feels about his experiences. Decision strategies generally require information concerning: (a) alternative actions; (b) the possible outcomes of these actions; (c) the relationships between actions and outcomes; and (d) the relative preferences for the possible outcomes.

2. Although relevant information cannot guarantee good educational-vocational decisionmaking, it is prerequisite to it. This calls for a continued search for relevant information and assistance to students in organizing and making use of the information. For "good" decisionmaking the individual needs adequate information and an effective strategy for organizing and synthesizing the information to arrive at a choice of action. The relationship between each action and its possible outcome can be categorized according to whether the outcomes are known with certainty, involve risk or are entirely uncertain. The more realistically a student can estimate the probability of certain actions leading to certain outcomes, the better he will be able to decide upon courses of action leading to desired outcomes.

3. Ideally, the student in estimating how likely it is that he will take a certain action will base his estimate on as objective data as possible. He interprets the data subjectively, however, and therefore the element of subjective probability enters into his estimate. Contributing to the choice of an action is the value ascribed to it and the probability of its attainment. Although there are indications that the individual's assessment of the probabilities of outcomes affects his choice in certain situations, the expected value notion does not consistently yield precise prediction of choices.

4. Ego involvement relates to the value notion. Apparently, analysis of educational-vocational decisionmaking must take into account the student's affective and creative reactions to success and failure.

5. Much of the research and theory cited previously is relevant in this context. For example, reactions to success are self-perpetuating: experience of success leads to further success with added effort; the continued experience of failure leads to reduction of effort and still more failure in the face of unrealistically high aspirations.

6. Aspirations governing decisions can be modified in group situations. The individual moves his aspirations to correspond with what he perceives as the average performance and level of aspiration of the group. This can have positive or negative consequences depending upon the potential of the individual and group numbers. Within or without the group the "maximizing of hypothesis" is relevant which predicts the individual's choice on the basis of his level of aspiration and his assessment of the probabilities linking each alternative action with its possible outcomes. This "probability judgment" is based on research indicating that the individual's level of aspiration tends to: (a) move up after successful goal attainment and down after failure; (b) be set near the boundaries of his ability; (c) stay out of excessively difficult or easy areas; (d) be highly dependent on recent or similar experiences; and (e) be affected by knowledge of the average performance of relevant reference groups when first-hand experience is lacking.

7. A crucial point in the development of this argument is that educational-vocational decisionmaking is intermeshed with ego-involving, achievement-oriented situations. Thus, the function of probability estimate in the decisionmaking appears to be to provide links between actions and outcomes and also to affect the choice of outcome.

8. Implications are that: (a) subjective probability estimates are an essential, integral part of the decision process, necessitating as much objective information as possible as a base for the estimates; (b) the estimates may affect the value a student places on an educational or vocational outcome; and (c) under the circumstances there has yet to be achieved a model which will accurately predict educational-vocational choices.

9. In the meantime, the decisionmaking framework may indicate a process-of-choosing helpful to the student. Rather than dictating his choice or leaving him prey to misconception or subjective bias in selecting alternatives, the process can help the student to understand what is misleading or irrelevant, to collect new data suggesting other alternatives and to determine the usefulness of outcomes empirically.

10. The process will be enhanced through appropriate research. There is the need for evaluation research to assess weaknesses and improvement needs in current guidance programs designed to assist in educational-vocational decisionmaking. Pertinent questions in this respect are: (a) Do students have access to the necessary information for appropriate information in useable form? (b) Do they understand it? (c) Do they make use of it in their decisions? There is also the need for evaluative research to assess the effectiveness of programs designed for improvement. Finally, there is the need for informational research to provide knowledge relevant to educational-vocational decisions.

Although steps have been taken to provide a student characteristics model, more needs to be done to synthesize and refine these and related materials. Much more also needs to be done to implement the two forms of evaluative research suggested. But here, too, a start has been made, as exemplified in Seron's 1967 research.[28]

Seron used Gelatt's and his associates' conceptualization about the decisionmaking process, just discussed, and Super's 1957 concept of vocational maturity for his conceptualization of college choice as a process that takes place over a period of time.[29] The process for the student involves a change from little awareness about college to the choice of a specific college and actual attendance there. The choice may also be based, at least in part, on the information he has about the college, his attitude towards college and the extent to which he is involved in the decision process. There are four elements of the choice process: (1) amount of information about the college possessed by the student; (2) his need for college planning; (3) his concern about college planning; and (4) his involvement in college planning. The process occurs through five overlapping, developmental stages: (1) unawareness of college as a possible future concern; (2) indifference toward college choice even when aware a choice must be eventually made about college; (3) questioning about college; (4) action in choosing a college; and (5) resolution of a college choice.

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[28] M. S. Seron, *op. cit.*

[29] D. E. Super, *The Psychology of Careers.* New York: Harper, 1957.

Seron and Bowersox devised a two-part questionnaire to conform to this model; the first part concerns the information about college considered important for high school students to possess; the second part assesses the student's need to consider college and his concerns and involvement with college planing.[30] The questionnaire was then administered to the entire population of three different high schools in 1967: a rural, urban and suburban high school.

Two null hypotheses governed the analyses: (1) that there would be no differences among the schools on the four variables of information, need, concern, and involvement in reference to college plans, sex, and the student's class level; and (2) that there would be no differences within the schools on the four variables, again in reference to college plans, sex and class level. The findings resulted in the rejection of both null hypotheses.

More specifically, the differences on all four variables were particularly great between those students who reported they planned to attend college and those who did not. The differences on the four variables were also great among class levels, with one notable exception: the differences in Concern over College were nominal. There was also relatively little difference among grades for Need to Consider College when those who planned to attend college were considered separately. When the students who did not plan to attend college were considered separately, there were essentially negligible differences among grades on both the Concern and Involvement scales. The seniors who did not plan to enter college had much higher scores (beyond a standard deviation) than the noncollege freshmen on Need to Consider College and Information; yet the noncollege seniors' scores were no higher than those of the freshmen who planned to enter college on these scales.

Longitudinal analyses of the same students over a 4-year period would provide a truer test of Seron's model. Nevertheless, it does appear to have applicability. At the same time, more is involved in the decision to attend college than Seron's model accounts for. This is especially evident in view of the differences between those who did and did not plan on college beginning with the freshman year, and the lack of difference in concern at all class levels. Indications are that information about college is not enough to promote concern about it, and that information is certainly too late if provided only in the senior year of high school.

Perhaps a still more relevant and generally applicable model is available by imposing a student-characteristic model, suggested by the multivariate analyses previously discussed, upon the informational model of Seron's as indicated in figure 4. The two horizontal grids represent the two dimensions in Seron's model: college information possessed by the student, and amount of movement in the college choice process. Ideally, the model depicted in figure 4 would be three-dimensional, showing the horizontal grids perpendicular to each other, the vertical grids perpendicular to each other on another plane, and both planes perpendicular to each other.

Essentially, the two horizontal dimensions interact with or are dependent upon each other, symbolized by the reciprocal or double arrows between the grids. The vertical dimensions of environmental press and predisposition also interact with college information and college choice movement. The elements listed as contributing to environmental press are those that have consistently been manifest in the research, either separately or in clusters, as associated with the decision to attend college. The elements of predisposition likewise are those that have consistently been found to be relevant to the disposition to attend college prior to entrance and persistence after entrance. Both the press and predisposition variables are those that have been corroborated statistically as potent, interacting variables predictive of college decisions in the multivariate and particularly the discriminant analyses of Dole and Weiss, Flanagan and Cooley, and Trent, previously cited. They are listed roughly in the order of their weight as predictors of decisions about or patterns of college attendance.

Of primary importance is the regression line determined by the interaction of the various grids. At the most negative position the student will be entirely indifferent to college and at the most positive he will be actively engaged in deciding upon, preparing for or entering college, depending upon the juxtaposition of his "scores" on the four dimensions of the model.

As a matter of fact, the elements involved and their interactions are measurable, at least to some degree. Therefore, one can indeed speak of "scores" in reference to this model, and their predictive power. Scores on environmental press towards college, predisposition towards it, awareness of it, and information about it should be highly correlated; high scores on all these elements should constitute an almost sure prediction of deciding about college and also generally deciding positively to enter college. Low scores should predict the opposite. Mixed high and low scores should indicate less action towards decisionmaking as well as specifically where compensation would encourage appropriate action if deemed desirable. For example, where it is known parents are discouraging, surrogates such as teachers or counselors should take their place in a consistent manner if it is impossible to change the behavior of the parents. Where information about self or college is lacking, counseling for decisionmaking through the development of appropriate consideration of alternatives might well be instigated.

The model should be tested and both it and the measurements of its components should be refined. This development is urgent. Nevertheless, the theory and data in this paper strongly suggest that even in its present form, the model comprehensively depicts the dynamics of college decisionmaking. Moreover, the model does so in such a way that decisions regarding college can be predicted and—given adequate time and resources—modified where appropriate.

IV. CONCLUSION

Any comprehensive consideration of universal higher education must take into account that there is nothing universal about the decision to enter college. A host of factors influence the aspiration to attend college as well as access to higher education. The establishment of the goal of universal higher

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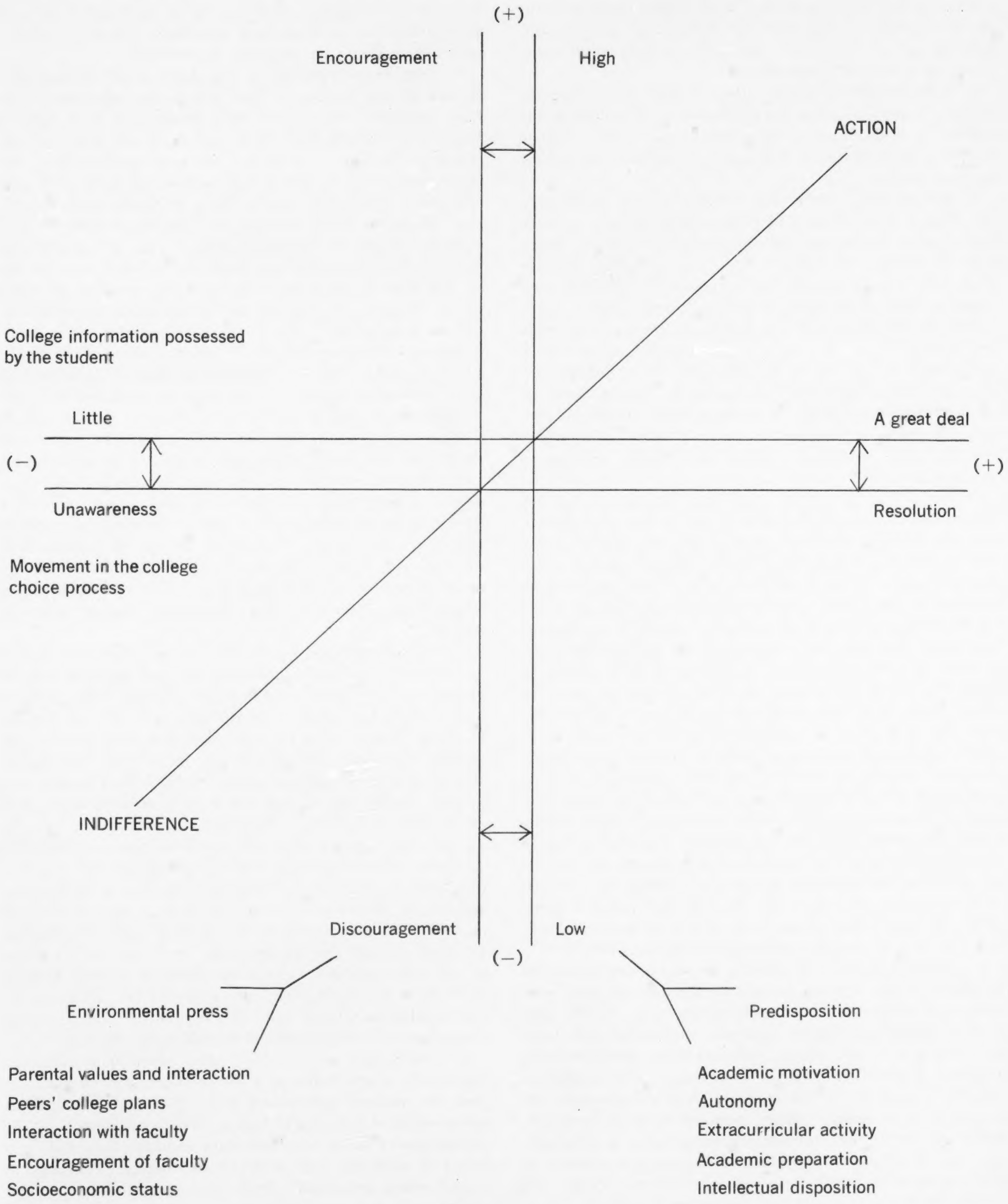
[30] M. S. Seron and S. H. Bowersox, Evaluation of a College Information Program and Implications for Defining the College Choice Process in the Secondary School. Unpublished research report, Skokie, Illinois: Niles Township High Schools, 1963.

Figure 4.


(+)
Encouragement
High
ACTION
College information possessed by the student
Little
A great deal
(−)
(+)
Unawareness
Resolution
Movement in the college choice process
INDIFFERENCE
Discouragement
Low
(−)
Environmental press
Predisposition
Parental values and interaction
Peers' college plans
Interaction with faculty
Encouragement of faculty
Socioeconomic status
Academic motivation
Autonomy
Extracurricular activity
Academic preparation
Intellectual disposition

education for all who can profit from it cannot take place without giving serious attention to just who it is that can indeed profit from it, and under what conditions. The intent of this study of factors associated with college decisionmaking was to provide some attention to these issues. A brief summary of aspects of the study and some of their implications follows in a series of propositions.

1. *The decision to enter college is part of an enduring process.* It is the result of an accumulative, interrelated, and interacting multivariate process that begins during earliest childhood, as indicated in the above commentary and following propositions.

2. *Socioeconomic status is a complex environmental press on college decisionmaking.* A primary factor in this process is socioeconomic status, but not financial status as such. Socioeconomic status is a complex environmental press with lifelong effects. It is centered in the family, but includes peer groups, specific locale, school, and community as well. It conditions the breadth of contacts, experiences, awareness, needs, and interests which contribute to educational and vocational aspirations. It also affects academic self-concept, motivation, self-competency, leadership, extracurricular involvement, interest in abstract thinking and ideas, personal autonomy, positive interpersonal relationships, and positive relationships with authority, all elements related to academic achievement and aspiration.

3. *Motivation primes the established behavior underlying educational decisions.* Motivation is the catalytic force underlying the decision to attend college. Broadly defined, it is a need or desire accompanied by the intention to attain a goal that will satisfy the need. It is an internal state that controls behavior by determining the strength and specificity of action out of various presumed alternatives. Academic motivation, like motivation generally, originates and is observable from an early age. The decision to attend college, as a product of motivation, is the cumulative result of established, stable behavior which is resistant to change. Important variables that form this behavior from earliest childhood are: selective rewards; inculcated values; experience of approval, acceptance, adequacy, mastery of the environment, competency, and esteem; expectation; and interaction with the environment generally, and significant other people in that environment. Emotional acceptance of a child, his academic motivation, and his perceived competence, worth and social power are interrelated elements that determine his position in class, his attitudes and decisions about education and his role and position as an adult. As noted, these elements are observable early in school, and may then be modified, although not without difficulty.

4. *Parental influence is primary in educational-vocational decisionmaking.* Parents constitute the earliest and most potent environmental press on decisionmaking. Middle class parents, particularly, foster academic motivation underlying the decision to attend college. Parental factors associated with academic motivation, need for achievement and aspirations include: reward for verbal behavior; high expectations; encouragement to attend college; personal traits of ambition, drive and intellectual interests; encouragement of independence and self-responsibility; guidance tempered by permissiveness; democratic family structuring; decision-sharing; and interest in, interaction with and rapport with children. Characteristics more frequently found among lower socioeconomic parents and which have a negative effect of educational achievement and aspiration include: failure to reward verbal behavior and recognize individual merit; conditional show of love; autocratic maintenance of the family structure; authoritarian disposition; and fostering dependency.

5. *Peer groups represent an important environmental press on educational decisions.* Peer groups can influence education. Students who respect their fathers and their fathers' occupations identify with them more and are more college-oriented. Students who do not are more peer-oriented and less college-oriented. Where both parents and peers encourage education, the student is most likely to decide upon college.

6. *Religious background and minority status represent subcultural presses on decisionmaking.* Two subcultural elements of the socioeconomic environment which have a bearing on education decisions are religious background and minority status. Values pertaining to very conservative or fundamentalist denominations have in the past had the effect of encouraging an ingroupness and suspicion of ideas of the larger, educated society that has inhibited intellectual interests and high educational aspirations. Members of black and Mexican-American minority groups have to contend with a second language problem, circumscribed living conditions and certain values that are incompatible with middle class prerequisites and norms for academic achievement and motivation. Academic aptitude scores are limited in their power to predict educational achievement and aspiration for minority students. However, achievement orientation, degree of positive self-concept, sense of self-competency, self-esteem and sense of personal control of the environment are variables important to educational achievement and aspirations among minority students.

7. *Schools, although capable of exerting a positive influence on academic achievement and aspiration, are generally neutral or negative in influence.* Schools are generally found to exert only a negligible influence on students' achievements and aspirations, if any. Teachers and counselors work mostly with middle class youths who are already motivated academically. Where parental encouragement is lacking, schools do not compensate. In the case of minority students, schools tend to set up barriers to learning. Teachers are not sensitive to the nature, needs, experiences and learning habits of minority students. They frequently reinforce handicaps and negative self-images of minority students by their own prejudgments, and by their insistence that minority students behave in school in middle class terms that are not part of their environment. Experiments and special programs, however, have demonstrated that consistent, appropriate efforts by properly trained staff can make appreciable differences in the achievements and aspirations of students. The efforts must be enduring, comprehensive and intensive to be sufficiently effective.

8. *Community characteristics affect educational decisions.* Apparently, communities as a whole exert an environmental press on students' perceptions and values that is somewhat independent of the press of family, friends and school. Wide community variation in college plans and attendance has been found in statewide and cross-country studies. Decisions to attend college appreciably diminish among students in rural communities compared with others, and appreciably increase

in communities with a large proportion of professional workers, regardless of the students' academic aptitude or socioeconomic status. Generally, communities that provide easy access to inexpensive colleges, such as public junior colleges, have the highest proportion of students who decide upon college. This is true particularly for students at the lower levels of socioeconomic status or academic aptitude, or for those who are less sure of their plans than other students.

9. *Educational decisions are also vocational decisions.* The greatest proportion of students who decide upon college do so primarily for vocational purposes, and even those who have another purpose in mind, such as attaining a liberal education, generally attend college for vocational purposes also. Career decisions, therefore, vitally affect educational decisions. The perception the student forms of the adult professional or occupational role he shall assume bears directly on his educational aspirations. Vague goals contribute to indecision about education. College-bound students, however, tend to be goal-oriented. In addition, the earlier the educational-vocation decisionmaking of students, the more likely it is that they will enter college.

10. *The dynamics of decisionmaking are diverse.* The sources and developmental features of academic motivation can be traced and categorized according to common patterns with some degree of accuracy. But this is not to say that the dynamics of educational decisions or the specific decision to attend college are of a single kind. Underlying the motivation leading to the decision to attend college may exist quite different needs, realized in different ways by individuals of different backgrounds and characteristics.

11. *Decisionmaking is group-rooted and can change best in a group situation.* The individual gauges his values and behavior to conform to the basic groups to which he is exposed and with which he identifies. At the same time, the group discourages individual divergence from its norms. Decisions are made and carried out most effectively when supported by the group, arrived at by group consensus, when the individual feels he has or could have participated in the decisionmaking and when the individual feels accepted by the group. This may help to explain why minority students have been found to change in educational achievement and aspiration when they have become part of an integrated classroom, but not when attending schools that were theoretically integrated but which maintained segregated classrooms. It also indicates the advisability of assuring that students who can profit from college are accepted in a group that will reinforce the decision to enter college, particularly if the students belong to family or peer groups that would tend to discourage college. There is another reason for positive reinforcement from reference groups. Students who are anxious about their own status may not be free to assume the level of anxiety that may be prerequisite to need for achievement. Group acceptance and support of the individual can release him from anxiety about himself so that he can withstand the anxiety of academic involvement without excessive personal threat.

12. *The interaction and relative weight of variables that contribute to the decision to enter college are identifiable and can be used to assist educational-vocational decisionmaking diagnostically and "therapeutically."* Recent research has begun to identify measurable psycho-sociological variables that are predictive of various patterns of college attendance or nonattendance. The interaction of these variables has been demonstrated and also the relative weight they possess in predicting college entrance and persistence. In the meantime, the investigation of the steps that are involved in decisionmaking has led to the development of models designed to assist students to make more appropriate educational-vocational decisions in counseling situations by organizing needed information so that they can understand and appropriately choose from among alternatives before them. Conceivably the combination of the student characteristics paradigm with the decisionmaking model would provide the optimum opportunity to diagnose students' educational potential from an early age, to provide consistent assistance in areas known to be in need of compensation and to provide comprehensive informational input to students to maximize their self-understanding and consequent educational and career decisions.

13. *In the context of the preceding propositions, educational and government planners must further clarify what they intend by universal higher education.* There are many who have the potential for higher education and who, no doubt, could profit from it, but their potential is suppressed by their socioeconomic environment and school experiences before they enter high school. Simply to assure access to some college through such means as scholarships after high school is not to provide higher education for those who have decided against or essentially have been prevented from entering college long before that time. Only compensatory programs initiated early in childhood and continued intensely throughout grade school and high school will make higher education a reasonable option for them. Clearly, financial assistance, as such, is not the major determinant of college attendance, whatever one decides about his education. On the other hand, questions must be raised about how profitable higher education is for many, once they are assured entrance to college. Higher education is no panacea, and perhaps other post high school experiences would be much more beneficial to many now in college or who will enroll in the future. The assumption that universal higher education, *ipso facto,* will be generally beneficial involves grave risk without further evaluation.

14. *The provision of universal higher education and the understanding of individual decisions regarding college specifically requires a comprehensive program of research and evaluation.* Again, in light of the preceding propositions the intelligent, optimum provision of higher education is dependent upon research and evaluation programs, including the following interrelated objectives: (a) to learn more about who specifically can profit in what ways from how much of what kind of higher education; (b) to improve the information base regarding the dynamics of educational-vocational decisionmaking and the refinement of models designed to apply this knowledge; (c) to learn how to restructure the socioeconomic environment beneficially when it is found debilitating to optimum educational-vocational decisionmaking; (d) to evaluate programs designed to assist students in their educational achievements and decisions, to document the common elements of these programs found to be most effective and to learn how to apply them economically on a wide scale; (e) to learn how to develop integrated educational, counseling and social reference groups to compensate for negative press

from the socioeconomic environment; and (f) to learn what characteristics and techniques of teachers, counselors and schools best elicit behavior from youths that is directed toward the realization of their potential, sense of worth and satisfaction.

15. *Optimum decisionmaking in reference to universal higher education requires revision in the allocation of professional resources.* In the context of this study, professional resources in the schools must at a minimum meet four objectives at all grade levels: (a) the consistent provision of supportive, integrated group experiences and communication with parents; (b) the recruitment and training of teachers to be sensitive to the needs and natures of a diversity of students without prejudging them; (c) the recruitment and training of teachers who will apply techniques designed to elicit the greatest potential and satisfaction from the diversity of students; and (d) to provide enough personnel to be able to assist students effectively in appropriate decisionmaking and other forms of personal development from the earliest years of school.

These propositions are presented with the full knowledge that the actions they suggest will be difficult and expensive to implement. They are also recommended at a time when the withdrawal of public support for the schools is reaching a point that hints of social suicide. And that is precisely the point: American society depends upon a vital educational system. To repress it, to halt its self-evaluation and consequent program improvement is to debilitate it and the rest of society.

Educational and government planners may be faced with a critical decision of their own, therefore: whether to acquiesce to distraught citizens who are unwilling to relinquish more of their affluence for sake of the development of society's educational institutions and all of its citizens who stand to benefit from these institutions, or whether to try to enlighten the public as to its educational needs and to promote the allocation of resources necessary to meet these needs. To reiterate, whatever the form universal higher education is to take, it will not be accomplished through rhetoric. Universal higher education can only be realized through the universal support and action of those who are responsible for its provision.

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An Examination of Barriers to College Attendance

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I. INTRODUCTION

Higher education has in the past decade come to be viewed increasingly as a "right" rather than a privilege. This view holds that all young people should have an equal opportunity to partake of postsecondary school study. The reasons for this development are many and complex, but principal among them is the belief that postsecondary training (college) confers a range of important benefits upon people—from increasing their earning power and enjoyment of life to fostering better citizenship.[1] To the extent that higher education is seen as a right, then the ability to exercise this right should be open to all young people of ability who aspire to college, irrespective of their family's social-economic background and of attendant financial constraints.[2]

In recent years, the Nation has become increasingly aware of the fact that equal educational opportunities are not available to all. The proportions of students from low-income families in postsecondary education are considerably lower than at high-income levels. The fraction of minority-group students is still exceedingly small, and many high ability students do not attend college. This recognition has been followed by a variety of efforts, among them the enrollment of more disadvantaged students, the offering of greater amounts of financial assistance to needy students, a broadening of the range of postsecondary school options to include junior colleges and vocational-technical schools, and so on. But much more remains to be done. In particular, the financial barriers need a thorough exploration in order to determine what policies and programs might be most appropriate in minimizing, if not offsetting, these barriers.

A number of questions arise regarding the role of financial barriers to undergraduate college attendance. Exactly what is the nature of these financial barriers to college attendance? How important and how large are these barriers? What types of young people are most affected by them? To what extent does student financial aid already offset these barriers? How many and what kinds of students benefit from existing financial aid resources? What might be the effect of alternative plans to reduce or remove financial barriers to college attendance? How might these plans be financed? These are some of the major questions.

This study reviews the impact of financial barriers and ways to offset them, considers enrollment patterns and family income, the financial costs of college, how people pay for college, and financial aid resources and their distribution. This information is then pulled together for several broad classes of institutions in order to bring out the interrelationships among financial need, college costs, and financial aid, based upon 1966–67 data. Little effort has been given to preparing a comprehensive review of the literature, since several such reviews are already available. The study seeks to provide what is hoped will be a more comprehensive picture than now exists of the impact of financial barriers on college attendance patterns.

II. CONCEPTUAL ISSUES: DEFINITIONS, APPROACHES, POLICY ISSUES

A number of important conceptual issues must be considered at the outset. The first group of issues focuses on defining financial barriers—the groups of young people affected by financial barriers, the cost elements that constitute the financial barriers, and the types of financial aid that act to offset these barriers. The second group of issues concerns alternative ways of examining the nature of the financial barriers to college attendance. The third group of issues takes up the policy choices that must be considered.[3]

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[1] Burton A. Weisbrod, "Investing in Human Capital," *Journal of Human Resources*, I (Summer, 1966), pp. 5–21.

[2] See papers in "Special Issue on Equal Educational Opportunity," *Harvard Education Review*, XXXVIII (Winter, 1968).

[3] A number of these issues are treated in W. Lee Hansen and Burton A. Weisbrod, *Benefits, Costs, and Finance of Public Higher Education*, Markham, 1969.

Definitions

Defining Those Affected By Financial Barriers

The task of defining who is affected by financial barriers to college attendance is no easy one, simply because the reasons for going or not going to college are so many and so varied. Accordingly, one must differentiate among eligibility for college, desire to attend college, and the ability to finance college.

The number of 18-year-olds who are eligible to attend college, given current admission standards, is substantially below the total number of 18-year-olds. Over one-fourth of the age cohort is almost automatically ineligible because, for a variety of reasons, many young people fail to graduate from high school.[4] Of those who do graduate from high school the number eligible to attend college approaches 100 percent, since almost anyone seeking college admittance will be admitted by one college or another because of the wide variation in admission standards. Thus, virtually all potential college students (high school graduates) will be eligible to enroll in a college, though not necessarily the college of their choice.

The number of 18-year-olds who desire to attend college will be less than the number who are eligible to attend inasmuch as young people have a range of aspirations which does not in all cases include college attendance. A substantial number of males may desire to enter the labor force immediately, taking up full-time employment, entering a job which involves on-the-job training, or going into some form of self-employment. A possibly even larger number of young females desire either to marry and commence having a family immediately, or to work briefly before marriage or for the first several years after marriage. In short, sizable numbers of young people, many of whom would qualify for college, prefer not to avail themselves of the benefits which are likely to accrue from college attendance.

The number of 18-year-olds who are financially able to attend college will be directly related to family well-being, for which family income is a reasonably good proxy. While the number of young people financially able to attend college is presumably less than the number eligible to attend, it may or may not be greater than the number who desire to attend. Actually, some young people who drop out of high school are from financially well-off families which could afford to help send them to college if they were eligible. More significant in number are those eligible students who are not able to attend college because of inadequate family financial resources. Also of some importance are the young people who because of inadequate financial resources must attend a less expensive college than they might prefer. In summary, this simply means that, at each level of college costs, the higher the family income, the greater will be the proportion of young people attending college.

How to separate out these several and largely independent influences as they affect college-going is no easy task. While eligibility can be identified readily, the distinction between those who do not desire to attend and those who are financially unable to attend is much less clear. So is the distinction between those who may be required to attend less versus more expensive colleges. The problem is further complicated because we observe a number of people attending college who do not appear to be financially able to do so, and vice versa.

Defining the Financial Barriers

The nature and level of the financial barriers to college attendance—the costs of education—vary depending on the point of view taken. There are several different positions: one takes tuition and related fees as a measure of the barrier; a second views tuition-fees and the living costs associated with attendance as a measure of the barriers; and the third adopts a still broader measure which includes tuition-fees and (a) what is called the opportunity cost of college attendance, i.e., the wages and/or income given up by virtue of college attendance, (b) the additional full, institutional costs of providing college education, or (c) both (a) and (b).

The view that tuition constitutes the major financial barrier is most common in State budgetary discussions, where the level of tuition and fees for public colleges and universities is determined by legislative policy and is seen as affecting access to college. This view that tuition is the major barrier is a narrow one, because even in public institutions tuition represents only a fraction of the costs of education to the student. Implicit in these discussions is the question of how much of the total costs of college should be paid by parents and students relative to taxpayers.

The more prevalent view is that the financial barrier to college includes tuition-fees and living costs, as ordinarily defined in college catalogs by the estimated costs of attendance.[5] Essentially, these are the out-of-pocket costs that must be incurred by students and parents. It is this measure of costs which is also used in financial aid need analysis and in the determination of the amounts of loans, grants, and work opportunities to be awarded through a variety of State and Federal financial aid programs.

Finally, there are what might be called the "full cost" approaches. The first of these is a full private resource cost approach which encompasses tuition-fees and opportunity costs, i.e., the income a student foregoes by attending college rather than working. The traditional room and board and miscellaneous expenditure items of college costs are subsumed in the opportunity costs since these expenditures would have had to be met out of income were a student not enrolled in college. Some would object to defining financial barriers in terms of the opportunity cost concept because for many students there is a willing transfer of resources from parents to children, so that opportunity costs pose no real barrier to attendance. But one way to get around this objection is to think only of that part of opportunity cost which directly affects family income. For many families of college-age students, family income is unaffected by whether or not the children are in college. Presumably the children would be financially independent were they not in college. But in some other poorer families total family income is increased because of contributions by young family members who are of college age but not attending college. Were these young people to enroll in college, family income would fall. Thus, we are talking about opportunity cost to the family rather than to the student himself.

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[4] U.S. Office of Education, *Digest of Educational Statistics*, 1968, Table 8, p. 7.

[5] As an example, see data on "Annual Costs" in Cass and Birnbaum, *Comparative Guide to American Colleges*. 1968–69 Edition, Harpers, 1968.

Another way of looking at costs as a barrier to attendance is to retain college living costs and then to substitute for tuition-fees the full social costs of education, that is total institutional costs, both current and capital costs. The reason for using such an approach is that tuition varies greatly as a proportion of total costs. In private institutions tuition is much closer to total costs than in public institutions which depend upon the largess of State (and sometimes local) taxpayers rather than on private donors for most of their nontuition revenue support.[6]

Still another approach takes the full institutional costs and opportunity costs as being relevant. Such a view is most relevant if one is looking at the social productivity of investment in higher education; its applicability to this discussion is quite limited, however.

Defining Financial Aid: Needs and Receipts

Financial aid, like financial ability and financial barriers, can be defined in a variety of ways. There is the traditional financial need analysis approach, and there is what might be called a broader financial resources view.

In financial need analysis, financial aid consists of some combination of outright grants, work opportunities, and loans. Grants or scholarships are a simple transfer of resources to students and involve no repayment. Grants have traditionally been given largely as a reward for academic promise or potential rather than as an offset to limited family income. Work opportunities involve an exchange of work effort for money. This type of financial aid may involve having college students do work that would otherwise be done by regular, nonstudent employees. Loans represent a simple intertemporal exchange of present for future funds, to be repaid out of future income. Since interest subsidization is often involved, most loan funds are supported by either State or Federal Government agencies.

The frequent lumping together of grants, work, and loans into "financial aid" is somewhat misleading because these forms of aid are not perfect substitutes for each other. We suspect that students are not indifferent as to the "mix" of financial aid; they would undoubtedly prefer outright grants to loans or employment. And, they might also have some preferences as between loans and employment. For example, loans may be easier to obtain through the college than through banks, whereas more desirable jobs are often obtainable without the help of the financial aid office. In any case, the fact that these preferences exist and that financial aid resources fall well short of need has given rise to the strategy of "packaging" financial aid. By such packaging limited resources can be used more effectively in assisting those students most in need of help.

A related issue is that there is often a kind of arbitrariness in defining financial aid as that given out through educational institutions. For example, the student who is given the job of chauffeuring the college president will perform essentially the same tasks and maybe even earn the same amount of money as the equally needy student who on his own initiative finds a taxi driving job. Similarly, loans which can be obtained through the college or outside of it may have the same effect in facilitating college attendance.

In recognition of the rather artificial distinction between what is and what is not financial aid, an effort will be made later in this study to view the sources of funds both separately and collectively.

A broader conception of financial aid involves all the elements of the typical financial aid package, plus the difference between the full costs of college and the amount that the student is required to pay in tuition and fees.

Suppose, for example, that tuition-fees, room and board, and incidentals amount to $2,000 in a public institution and $3,000 in a private institution, and that the total cost (room and board, incidentals, plus full institutional costs) of college is $3,500 in both cases. This means that students are receiving financial aid in the amounts of $1,500 and $500, respectively, simply because tuition is set below costs. But if we assume that total institutional costs are the same at $2,000, and that room and board, and miscellaneous expenses are identical at $1,500, then the amount of financial aid, as it is usually defined, going to each student is zero. In fact, of course, each school is offering financial aid, as already shown, with taxpayers putting up the funds in public schools and alumni-donors doing so in private schools.

But whereas private schools charge higher tuition, they typically offer "rebates" (financial aid) in order to bring the cost of education into better alignment with family ability to pay. While public institutions also offer some limited financial aid based on family ability to pay, large amounts of this hidden financial aid (through low tuition) are available to all college-going families irrespective of ability to pay. This approach reduces the general level of financial cost to both the "needy" and the "non-needy." It does little, however, to assist "needy" taxpayers, or to assist more fully the really needy student through rebating some of the higher tuition fees that would be paid willingly by the less needy.

In summary, what seems clear is that there are several quite different ways to define financial ability, financial barriers, and financial aid, and that the particular definitions chosen may be of importance in determining the appropriate definitions for one or both of the other two concepts. Moreover, the particular definitions chosen affect the range and character of the issues that arise in considering how educational opportunities might be expanded.

Alternative Approaches

There are a variety of ways to explore the impact of financial barriers to college attendance. Three of them deserve special mention. The first concerns the time perspective taken, the second concerns the extent to which the entire system is scrutinized, and the third focuses on plans and their realization.

One approach is to look simply at people who are already in school to find out how they fared with respect to financial aid, given their family income level, the costs of the college being attended, and the like. While this kind of analysis is informative, it ignores the fact that sizable numbers of people may not have attended college because of the impact of financial barriers. Consequently, it becomes necessary to examine their characteristics as well in order to gain insight into the forces affecting college-going.

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[6] In effect, below-cost tuition is a type of financial aid to college students. The use of the full cost concept highlights this hidden and often unrecognized form of financial aid.

A second approach is to view the results as a system or process so as to see the ways in which financial barriers intervene at a number of different points. In the first instance they may operate so as to prevent the initial enrollment in college, either because individuals cannot finance college, even though they want to attend, or because individuals earlier in their high school careers dismissed the idea of attendance because of some implicit awareness of the financial problems involved.

Once a person is enrolled, however, the next question is whether or not he will be forced to drop out of school for financial reasons before completing the amount of schooling which he desires. For those people who do not attend initially or who later drop out, financial barriers will no doubt operate to prevent their later enrollment or reenrollments. Yet, some of these people do return, often enrolling in less expensive schools. Financial barriers may also operate to delay the completion of a degree because students must allocate a larger than average share of their time to earning their expenses while in college. The only way to explore these possibilities in any systematic manner is to develop a long-term longitudinal study which periodically provides information on an entire cohort. With such information, the effect of financial barriers at critical points in the college career path can be isolated.

A third and highly useful approach is to differentiate between plans and subsequent fulfillment of plans. Many high school seniors may plan to attend college but a smaller number may actually enroll. What considerations prevented the attendance by some and facilitated the previously unplanned attendance of others? This too requires a longitudinal approach.

None of these approaches can be developed fully, however, since not only are longitudinal studies limited in number, but ordinarily they have not given much attention to financial barriers.

Ultimately, the focus is on how barriers affect particular types of individuals. Unfortunately, these data, too, are not complete. In addition, however, the impact of financial barriers will vary greatly depending upon the type of school being attended. Accordingly, considerable attention is given to students classified by broad types of institutions. These data, for even a few classes of institutions, display substantial variation and help pinpoint where the most serious problems exist.

Policy Questions

At least two sets of policy questions are of interest. One set concerns the subject of this study while the other, which is not wholly independent, concerns the mechanism by which financial barriers can best be overcome.

Four important types of questions emerge about broad policy. The first inquires about the effect of a change in the financial barriers to college attendance, i.e., what would be the effect of changes in the costs of college (whether they are raised or lowered). The second concerns the impact of financial aid in overcoming the barriers to college attendance. The third inquires as to the effect of changes in family incomes on expanding opportunities for college attendance. Finally, it is important to understand what, if any, interactions exist among these different possibilities. For example, will a given amount of financial aid have a larger impact on college attendance than an expansion of family incomes? Or might an addition to family incomes have a greater effect at some income levels than at others? And so on.

The second set is narrower and gets quickly to questions of implementation. Illustrative of the questions are the following: What is the relative effectiveness of grants to individuals vs. grants to institutions? Might a system of loans to college students be "better" than our present system? What is the best "mix" of aid to students?

This paper offers little in the way of specific answers to either set of questions. Too little is known about the determinants of college attendance and the role of financial considerations in affecting attendance patterns. This report therefore can only bring together what is known so as to lay the basis for developing answers to policy questions such as these.

III. ENROLLMENT PATTERNS AND FAMILY INCOME

Enrollment Patterns

This section presents recent data on enrollment patterns of full-time and part-time students, and it comments briefly on the activities of nonstudents. The purpose is to provide general background information for later sections.

Full-Time Students

Total full-time undergraduate enrollment amounted to 4.8 million students in the fall of 1968, as shown in table 1. Almost three-fourths of the students were enrolled in public institutions, and the vast bulk were in 4-year schools—either universities or other 4-year colleges. Males outnumbered females by a margin of roughly 3 to 2. The number of full-time, first-time students reached almost 1.5 million, with the distribution by sex and type of institution not much different from that for all full-time undergraduate students.[7]

The 4.8 million undergraduate enrollment constituted approximately 34 percent of the college age population (age 18–21), while the 1.5 million full-time first-time students comprised 43 percent of all 18-year-olds.

The proportions of high school students going on to college were considerably higher than these figures suggest. Data from the Department of Labor show that in October 1967 about 53 percent of 1968 high school graduates were full-time college students.[8] For men the percentage continuing in college exceeded 60 percent, contrasted to slightly less than 50 percent for females.

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[7] U.S. Office of Education, *Opening Fall Enrollment in Higher Education 1968: Part A—Summary Data,* Table 2, p. 26.

[8] Vera C. Perrella, "Employment of High School Graduates and Dropouts," *Monthly Labor Review,* June 1968, Table 1, p. 37.

TABLE 1.—*Fall Full-time Undergraduate Enrollment, 1968*

(in thousands)

Type of institution	Male	Female	Total
Universities			
Public	809	530	1,339
Private	226	122	347
Total	1,035	652	1,686
Other 4-Year Colleges			
Public	659	548	1,207
Private	509	398	907
Total	1,168	946	2,114
Two-Year Colleges			
Public	559	298	857
Private	66	55	121
Total	625	353	979
Total Public	2,027	1,376	3,403
Total Private	801	575	1,376
All Institutions	2,828	1,951	4,779

SOURCE: USOE, *Opening Fall Enrollments in Higher Education 1968: Part A—Summary Data*, table 2, pp. 6–7. Table 1 includes students in degree-credit and occupational programs. The totals may not always add because of rounding.

Comprehensive national data showing college completion rates are not available. However, it appears that roughly half of those who enter college eventually earn a baccalaureate degree, according to Trent and Medsker.[9] In contrast to this, Astin and Panos find that although almost 65 percent of entering undergraduates in 1961 completed four years of college by 1965, the percentage completing the baccalaureate degree was lower, about 55 percent.[10] The pattern of dropping out and the reasons for doing so will not be explored here.

The proportion of black students attending college is much lower than that of all students. Bayer and Boruch report that less than 6 percent of all students enrolled in colleges are black, even though blacks constitute 12 percent of the college age population.[11] This would suggest that roughly 16 percent of college age blacks are enrolled as full-time, undergraduate, degree-credit students.[12]

The fact that the proportion of blacks enrolled in college is so much lower comes as no real surprise. At ages 16–17 already over one-sixth of nonwhites have dropped out of school—and the fraction is undoubtedly higher for blacks—in contrast to a little over one-tenth for whites.[13] Moreover, the proportions of white and Negro high school seniors who graduate from high school also differ. For example, by 1967 almost 93 percent of white high school seniors surveyed in October 1965 had graduated from high school, as compared to less than 87 percent for Negro seniors.[14] Finally, there is a sizable differential between the percentages of white and Negro graduating seniors who go on to college. For the group of 1965 seniors just mentioned, 48 percent of the white high school graduates had attended college by February 1967 as compared to less than 35 percent for Negroes.[15] All in all, there is a cumulative and adverse set of forces working against the chances of blacks entering college.

The distribution of whites and Negroes by type of institution is not greatly dissimilar.[16] In October 1966, the majority of each racial group was in public institutions—60 percent for whites and 53 for Negroes. The only noticeable difference is a larger proportion of Negroes in church-related schools. And as might be expected 50 percent of all Negro college students are in predominantly Negro schools. These tend to be smaller schools on average—half the Negroes are in schools with enrollments under 2,500 versus only a quarter for whites. Essentially, this means more Negroes are enrolled in poorer quality schools.[17]

The male and female differences are also of interest. According to the special census survey, a higher proportion of girls than boys graduate from high school—about five percentage points—but 51.8 percent of males and only 41.9 percent of females went on to college.[18] Thus, both Negroes and females show lower college enrollment rates, but a larger proportion of Negroes than females are excluded on the basis of eligibility, i.e., lack of high school diploma.

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[9] James W. Trent and Leland L. Medsker, *Patterns of College Attendance*, Center for Research and Development in Higher Education, University of California, Berkeley, 1968 (mimeo), Chapter 1.

[10] Alexander W. Astin and Robert J. Panos, *The Educational and Vocational Development of American College Students*, American Coun[illegible] on Education, 1969, Chapter 2.

[11] Alan E. Bayer and Robert F. Boruch, *The Black Student in American Colleges*, ACE Research Reports, American Council on Education, 1969, p. 1.

[12] If blacks comprise 12 percent (1.7 million) of the 14.3 million college age population, and if they comprise 6 percent of the total full-time undergraduate degree-credit student population of 4.8 million, then there are approximately 300,000 full-time black undergraduate students. A new Census report indicates for October 1968 that there are 434,000 black college students, of whom 34,000 are beyond graduate students. Overall, about 20 percent of all undergraduate students are part-time students. If we assume a somewhat higher part-time rate, say 25–30 percent, then the number of black, full-time undergraduate students ranges between 300,000 to 350,000. For additional data, see U.S. Bureau of the Census, "School Enrollment: October 1968 and 1967," *Current Population Reports*, Series P–20, No. 190.

[13] U.S. Department of Labor, *Employment of School Age Youth*, Special Labor Force Report No. 98, Table C, p. A–7.

[14] U.S. Bureau of the Census, "Factors Related to High School Graduation and College Attainment: 1967," *Current Population Reports*, Series P–20, No. 185.

[15] *Ibid.*, Table 6, p. 5. The 35 percent figure seems a bit high, given that only 24 percent of Negro 18-19-year olds were enrolled in college in October 1968; this compares with 43 percent of white 18-19-year olds. U.S. Bureau of the Census, "School Enrollment: 1968 and 1967," *Current Population Reports*, Series P–20, No. 190, Table a, pp. 12–14.

[16] U.S. Bureau of the Census, "Characteristics of Students and Their Colleges, October 1966," *Current Population Reports*, Series P–20, No. 183, Table 3, p. 12.

[17] For some evidence on quality, see Alan L. Sorkin, "A Comparison of Quality Characteristics in Negro and White Public Colleges and Universities in the South," *Journal of Negro Education*, 38 (Spring, 1968), pp. 112–119; also Earl J. McGrath, *The Predominantly Negro College in Transition*, Columbia University Press, 1965; and A. J. Jaffe, Walter Adams, and Sandra G. Meyers, "The Sharply Stratified World of the Negro College," *College Board Review*, Winter 1967–68, pp. 20–28. School quality differences are now, however, not reflected in the tuition data which show that the distribution of white and Negro students by levels of tuition and fees paid is almost identical. U.S. Bureau of the Census, "Characteristics of Students and Their Colleges, October 1966," *Current Population Reports*, Series P–20, No. 183, Table 3, p. 12.

[18] U.S. Bureau of the Census, "Factors Related to High School Graduation and College Attainment: 1967," *op. cit.*

Part-Time Students

But what about part-time students and the large numbers of college-age people who are not students? They must also be examined briefly.

Part-time college students in the fall of 1968 numbered over 1.7 million.[19] Almost 80 percent of them were in public institutions. Not surprisingly, over half of them attended 2-year institutions. In the fall of 1968 almost 425,000 part-time students enrolled for the first time. Of these close to 90 percent were in public institutions and almost three-fourths were in 2-year institutions. In looking at the part-time enrollment status of 1968 high school graduates, about 63,000 were found to be enrolled part-time, as contrasted to 1.5 million full-time students.[20] Thus, part-time attendance is not an important option for any substantial numbers of new high school graduates who do not enroll full-time in college. Indeed, most of this group is committed to work: 84 percent of part-time students are in the labor force, as compared to 88 percent of those not enrolled in school. Full-time students, by contrast, have a labor force participation rate of only 37 percent.

It is difficult to say much more about part-time undergraduate students in the absence of better data. It does seem clear, however, that the vast majority of them are people who have been out of school for a year or more, and are now taking a course or two for any of a wide variety of reasons. Whether a large number of part-time students were prevented immediately after high school graduation from pursuing college course work is a question that cannot be answered here.

Nonstudents

The vast bulk of the male nonstudents are in the labor force and have jobs. Females by contrast are less likely to be either in the labor force or employed; many, of course, are married and attending to their families.[21] Again, little is known about the extent to which these nonstudents were precluded from attending college because of financial factors.

Nonfinancial Characteristics of College Students

The characteristics of college students have been studied extensively by many people.[22] Some mention must also be made of a few recent studies of particular interest.

Some of the most comprehensive data on the characteristics of entering college freshman students are contained in the American Council of Education Norms studies developed by Astin.[23] Information is tabulated on academic achievement and aspirations, background factors associated with college attendance, financial information, and student attitudes and behavior. Comparative data are available for 1966, 1967, and 1968. In addition, data on black students are now available for 1968.

A longitudinal study based on a large sample of 1961 freshman entrants illustrates how the ACE data can be employed.[24] Although the focus of this work is on the impact of college on students, many other types of questions could be explored with the underlying data. Jaffe and Adams in a recently completed study for the Office of Education provide extensive data on the transition from high school to college.[25] They also look closely at the financial determinants of college attendance and nonattendance. Reference has already been made to the Trent and Medsker study, based upon a 1959 sample of 10,000 high school seniors in 15 communities across the country.[26] The report of the Commission on Human Resources and Advanced Education also considers some of the factors associated with college-going, persistence in college, and the like.[27] Another large study is that of Sewell.[28] It builds on the data collected by Little on 1957 high school seniors.[29] A number of analyses have been completed and others are in progress.

Family Income and Ability to Pay

The amount of information available on the family incomes of college students has grown rapidly in recent years. The efforts of the Bureau of the Census have been greatly expanded so as to provide national distributions. And the American Council of Education's National Norms yield for the first time broadly based institutional data.

Family Income of College Attenders Versus Nonattenders

The most recent and comprehensive data showing the relationship between family income and college attendance come from unpublished Bureau of the Census tabulations based on its October 1968 special survey on the characteristics of the school-age population.[30] One shortcoming of the data is that because of the small number of observations, extensive breakdowns by type of school, sex, and race, cannot be obtained; nor is it possible to restrict the results to undergraduates only. But even with these shortcomings, the data are highly informative as is shown by table 2.

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[19] See *Opening Fall Enrollment, op. cit.*

[20] Vera C. Perrella, "Employment of High School Graduates and Dropouts," *Monthly Labor Review*, June 1969, Tables 1 and 2, p. 37.

[21] For further details, see U.S. Department of Labor, *Employment of School Age Youth*, October 1966, Special Labor Force Report No. 98.

[22] Paul Heist, "Student Characteristics: College and University," *Encyclopedia of Educational Research* (Fourth Edition), pp. 1318–1329.

[23] See ACE Research Reports, *National Norms for Entering College Freshmen*, American Council on Education.

[24] See A. W. Astin and R. J. Panos, *The Education and Vocational Development of College Students*, American Council on Education, 1969.

[25] A. J. Jaffe and W. Adams, *American Higher Education in Transition*, Bureau of Applied Social Research, Columbia University, April 1969 (mimeo). Some of the data presented in this report appeared in: U.S. Bureau of the Census, "Factors Relating to High School and College Attendance: 1967," and "Characteristics of Students and Their College: October 1966," *Current Population Reports*, Series P–20, Nos. 183 and 185.

[26] Trent and Medsker, *op. cit.* In addition, see Trent and Medsker, *Beyond High School: A Study of 10,000 High School Graduates*, Center for Research and Development, University of California, Berkeley, 1967.

[27] J. Folger, *et al. Human Resources and Higher Education*. Russell Sage Foundation, 1970.

[28] Illustrative of the many papers emerging from this project is W. H. Sewell and V. P. Shah, "Parent's Education and Children's Educational Aspirations and Achievements," *American Sociological Review*, XXXIII (April 1968), pp. 191-209.

[29] J. K. Little, *A Statewide Inquiry into Decisions of Youth About Education Beyond High School*, School of Education, University of Wisconsin, Madison, 1958.

[30] These data were made available through the Office of Education.

TABLE 2.—*Income of College and Noncollege Families, October 1968*

Family Income	Percentage distribution by family income Total Families (1)	All families with no members 18–24 (2)	All families with members 18–24 not in college (3)	All families with members 18–24 in college (4)	Percent of families with members 18–24 in college 4 ÷ (3+4) (5)
Under $3,000	13	14	14	4	16
$ 3,000– 4,999	16	17	17	7	23
5,000– 7,499	24	25	22	17	33
7,500– 9,999	19	19	18	19	41
10,000–14,999	19	18	20	29	50
15,000 and over	9	8	9	24	63
Total	100	100	100	100	40
Median income (dollars)	$7,200	$7,000	$7,200	$10,500	—
Number of families* (millions)	50.3	41.7	5.1	3.5	—

* Includes those not reporting income.

SOURCE: Unpublished Bureau of the Census tabulations.

In October 1968 over 17 percent, or 8.6 million, of the Nation's 50.3 million families had one or more family members age 18–24 who were not married. Of these 8.6 million families, roughly 3.5 million or 40 percent had one or more children in college; and more than 400,000 families had two or more children in college.

When the family income levels of those with and without children in college are compared, one observes rather dramatic differences. The median family income of those with children in college is $10,500 (column 4) compared to $7,200 (column 3) for those with children in the same age group (18–24) not enrolled in college. Families having no children had roughly similar incomes of $7,000 (column 2); these were slightly below the median for all families (column 1).

The percentages of students enrolled by family income level, shown in column 5, range from 16 percent for the under $3,000 income class to 63 percent for the $15,000 and over income class. While there are numerous factors helping to account for this pattern, the role of family resources would appear to loom large. Interestingly, the difference in median family income between families with and without children in college ($10,500 less $7,200) is sufficient to pay the costs of college (tuition fees and living costs) at a first-rate private college.

It is also possible to examine the relationship between family size and college-going by family income level. As seen in table 3, columns 1, 2, and 3, median family income increases with size for those families with children in college. These increases may reflect, in part, the labor force participation of mothers helping to put their children through college. It is also rather interesting to see that the percentage of young people enrolled in college is larger in families having two rather than one unmarried child (18–24) (51 percent versus 38 percent) although it is not clear why such a pattern should occur. The percentage of children enrolled from three-child families drops off slightly to 49 percent. Although the sample size is quite small for three-child families, it is striking to observe that the proportions enrolled at the lower income levels exceed those for two- or one-child families. It can only be surmised that this reflects the impact of financial aid. The bottom line shows the median family incomes of comparably sized families whose children are not in college. Although family incomes rise with the number of children age 18–24, the increase is nowhere near as sharp, in either an absolute or relative sense, as it is for those families with children in college.

TABLE 3.—*Percent of Family Members Enrolled in College by Income Level*

Family Income	Percent of family members 18–24 enrolled One Member 18–24 (1)	Two Members 18–24 (2)	Three or More Members 18–24 (3)
Under $3,000	15	23	31
$ 3,000– 4,999	22	27	33
5,000– 7,499	31	43	37
7,500– 9,999	37	56	30
10,000–14,999	47	61	57
15,000 and over	61	61	73
Total Percent Enrolled	38	51	49
Median Income of Families with Members in College by Number of Members Age 18–24	$10,300	$11,100	$13,000
Median Income of Families with no Members in College by Number of Members Age 18–24	$7,200	$7,300	$7,600
Number of Families* (millions)	3.00	0.40	0.03

* Includes those not reporting income.

SOURCE: Unpublished Bureau of the Census tabulations.

While there are many factors which explain differential college-going by family size, it appears that family resources play an important role. For one-child families, a $3,100 income difference is available for sending a child to college. This difference drops to $1,900 per child ($3,800) for two-child families, still enough to send both children to good-to-excellent public institutions. But even in three-child families the average difference of $1,700 does not appear to seriously jeopardize the college-going potential of children in such families. Of course, these averages conceal a great deal and do not, of course, explain the higher college-going rates among larger families at the lower income levels. Once again, financial aid as well as student earnings are undoubtedly very important.

Another aspect of the role of income is revealed by the 1966 Census data reported in its publication and in the study by Jaffe and Adams.[31] First, the likelihood of October 1965 seniors having graduated from high school by February 1967 averaged 93 percent at levels of family income of $4,000 and above, in contrast to 87 percent of those families below $4,000. Similarly, the percentages of these seniors attending college rose dramatically with income, from 20 percent for incomes under $3,000 to 87 percent at incomes over $15,000. These and other similar patterns show up clearly in the median family income levels of these seniors and the process of selectivity by income level is quite apparent.

Did not graduate from high school	$5,900
Graduated from high school	7,200
Did not enter college	6,100
Entered college	8,600
Entered 2-year college	8,100
Entered 4-year college	8,800

Several other facets of income selectivity reveal themselves from the Census report on students and colleges, as summarized in table 4. Private schools, large schools, and higher quality schools all attract students from more affluent families.

Family income data by sex and race of students are rather limited in the Census studies. It is possible to make a comparison of family income by sex alone, but no differential appears.[32] This result goes counter to the usual finding that the average incomes of college females exceed those of males. Such a differential shows up in the data from the Astin-Panos study.[33] It also shows up in the ACE data.[34] On the assumption then that the income distributions of all parents of college-age children are the same, it can be concluded that the family income of girls not attending college is lower than for males who do not attend. With regard to Negroes, the information is less precise. However, it appears that whereas the median family income of all freshmen in the fall of 1968 is $10,200 and is $10,500 for all white freshmen, the comparable figure for blacks is in the neighborhood of $5,600.[35]

TABLE 4.—*Median Family Income by Characteristics of Colleges for All Dependent Family Members Age 14–34, October 1966*

Characteristics of College	Median Family Income
Type of College	
2-Year	$ 8,800
4-Year	9,200
Public	9,200
Private	12,800
Secular	12,500
Church Related	12,600
Other	8,800
All	9,300
Enrollment Size	
10,000 or more	12,900
2,500 to 9,999	9,100
under 2,000	9,200
Rank of College by Index of Freshman Aptitudes	
Low	8,400
Medium	9,200
High	12,800

SOURCE: Derived from U.S. Census of Population, "Characteristics of Students and Their Colleges: October 1966," *Current Population Reports*, Series P–20, No. 183.

The income position of those with children in college relative to comparable people without children in college can be determined by comparing these median figures with those for families with heads aged 45–54, the age group which contains most parents of college students. In 1967, the median family income of these whites was $10,000, while for Negroes it was $5,500.[36] These figures are not much different than those just reported. Thus, it is noted in this comparison of ACE and Census data for both blacks and whites, family incomes of the college freshmen correspond closely to the family incomes of all parents of college-age students.

There are several bodies of statewide data which show somewhat similar patterns for families with and without children in college. The data for California are of interest, revealing that in 1964 all California families had median incomes of $8,000, and families without children in college had incomes of $7,900. Meanwhile, the incomes of parents with children in college were: University of California–$12,000; State colleges–$10,000; and junior colleges–$8,800. A roughly comparable pattern of differences is apparent in Wisconsin data for the several types of institutions of higher education. It should be remembered that these results for States do not control for age and tend thereby to overstate the differences.[37]

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[31] The results of this paragraph are based on data from: U.S. Bureau of the Census, "Factors Relating to High School Graduation and College Attendance: 1967," *Current Population Reports*, Series P–20, No. 185, Table 3, p. 4, and Table 8, p. 6; and Jaffe and Adams, *American Higher Education in Transition*, Table 8, p. 177.

[32] U.S. Bureau of the Census, "Characteristics of Students and Their Colleges; October 1966," *Current Population Reports*, Table 2, p. 11.

[33] Astin and Panos, *op. cit.*

[34] ACE Research Reports.

[35] ACE Research Report, *The Black Student in American Colleges*, p. 45.

[36] U.S. Bureau of Census, "Income in 1967 of Families in the United States," *Current Population Reports*, Series P–60, No. 59, Table 10, pp. 35, 38.

[37] See Edward Sanders and Hans Palmer, *The Financial Barrier to Higher Education in California*, Pomona College, 1965; W. Lee Hansen and Burton A. Weisbrod, *Benefits, Cost, and Finance of Public Higher Education*, Markham, 1969; L. Joseph Lins and Allen P. Abell, *Comparison of Costs of Attendance and Income of Students Registered at the Madison Campus, the Milwaukee Campus, and the Centers of the University of Wisconsin, 1964–65*, Office of Institutional Studies, University of Wisconsin, Madison, Wisconsin, March 1967.

TABLE 5.—*Median Parental Income and Percentage Distribution of Estimated Parental Income by Type of Institution for All Freshmen, Fall 1968-69*

Estimated Parental Income	All Instit.	2-Year Colleges Public	2-Year Colleges Private	Tech. Instit.	Public	Private Non-Sec.	Prot-estant	Catholic	Universities Public	Universities Private
Less than $4,000	6.3	8.1	4.8	2.8	8.4	6.0	7.9	3.8	4.3	2.7
$4,000–$5,999	10.3	13.9	11.1	6.2	12.0	7.2	10.7	7.3	8.1	5.2
6,000– 7,999	15.5	19.5	17.9	12.7	17.7	9.8	14.5	12.6	13.1	9.3
8,000– 9,999	16.9	18.9	17.0	18.3	18.2	11.8	15.6	17.4	16.3	12.5
10,000–14,999	27.2	25.6	25.0	34.5	27.5	22.8	25.0	28.2	30.0	26.4
15,000–19,999	11.2	8.2	11.5	14.2	9.8	14.1	11.4	12.6	13.3	14.3
20,000–24,999	5.3	3.0	4.8	5.9	3.5	9.1	5.8	6.9	6.6	9.5
25,000–29,999	2.5	1.0	3.2	2.4	1.4	5.7	3.3	3.5	3.0	5.5
30,000 or more	4.8	1.8	4.7	3.1	1.5	13.6	5.8	7.6	5.2	14.7
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Median Parental Income	$10,200	$8,900	$10,000	$13,000	$9,300	$13,700	$10,300	$11,800	$11,700	$13,800

Source: ACE, *National Norms for Entering College Freshmen — Fall 1968.*

TABLE 6.—*Median Parental Income and Percentage Distribution of Estimated Parental Income by Type of Institution for All Black Freshmen, Fall 1968-69*

Estimated Parental Income	All *Institutions*		Predom. White *2-year Colleges*		Predom. White *4-year Colleges*		Predom. Black *4-year Colleges*		Predom. White *Universities*	
	Black	Nonblack	Black	Nonblack	Black	Nonblack	Black	Nonblack	Black	Nonblack
Less than $4,000	30.7	4.8	27.4	6.6	26.6	4.4	37.6	17.1	20.7	3.4
$4,000–$5,999	24.8	9.4	28.9	12.8	22.1	8.7	24.6	19.8	23.3	7.0
6,000– 7,999	17.0	15.4	18.9	19.3	18.7	14.9	14.1	16.9	20.7	12.1
8,000– 9,999	10.5	17.3	10.4	18.9	11.2	17.3	9.2	16.4	13.4	15.6
10,000–14,999	10.7	28.2	9.7	26.0	13.6	28.6	8.6	19.5	14.1	29.8
15,000–19,999	3.8	11.7	3.4	9.1	4.4	12.1	3.3	6.6	4.8	13.8
20,000–24,999	1.4	5.5	0.9	3.5	1.4	5.6	1.5	1.9	1.4	7.4
25,000–29,999	0.5	2.7	0.1	1.5	0.7	2.9	0.5	0.4	0.6	3.6
30,000 or more	0.6	5.0	0.4	2.4	1.0	5.3	0.5	1.3	0.8	7.2
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Median Parental Income	$5,600	$10,500	$5,700	$8,600	$6,800	$10,800	$5,000	$7,600	$6,600	$12,000

SOURCE: ACE, *National Norms for Entering College Freshmen — Fall 1968.*

Family Income of College Attenders: Institutional Data

The distribution of and median parental income of freshmen students in the fall of 1968 by type of institution are shown in table 5.[38] Several noteworthy results emerge. First, the median incomes of families of all freshmen agree quite closely with the Census data—$10,500 for Census and $10,200 for ACE. Second, there are quite large differences in median family incomes by schools ranging from $8,900 in public 2-year schools to $13,800 in private universities. These differences reflect, it would seem, the extent to which people implicitly or explicitly take into account the costs of college relative to family income. Students from public institutions, for example, have relatively lower family incomes, presumably because on average they are not able to afford private schools. But even students at private 2-year colleges have relatively low median family incomes; this may be a reflection of relatively modest tuition and fees which do not prevent lower income people from enrolling. Those students best off financially are, as expected, concentrated in private 4-year colleges, in private universities, and in technical institutions (most of these would appear to be private). Third, there are extremely wide variations in family income for students in each type of school. These differences may indicate that costs vary widely, and/or that financial aid resources are able to offset limited family incomes, and/or that income is not a good indicator of family ability to send their children to college. These points will be taken up later.

Data for black students are not shown in the same detail as for all students, but the comparisons are illuminating, as shown in table 6. The disparities in incomes are noteworthy. The poorest black students—with family incomes of $5,000—are in predominantly black 4-year colleges. The family incomes of black students in 2-year predominantly white schools are higher ($5,700), those in predominantly white 4-year schools are still higher ($6,100), and black students in predominantly white universities have the highest family incomes ($6,600). Interestingly, the higher the median family income of black students, the larger is the discrepancy between their family income and that of their white fellow students. While these income disparities suggest that blacks are highly motivated to attend college, they must be financially pinched unless large amounts of financial aid are being directed to them.

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[38] The ACE National Norms data are for newly entering freshmen. To the extent that the duration of college attendance is related to family income, the ACE data may give a less than perfect representation of the family incomes of all undergraduates.

Related Financial Information

Two bodies of data provide information on the relationship between college attendance, family background as reflected by socioeconomic status (SES), and ability or achievement. The Project Talent data show that among the top achievement group (top 20 percent), measured by test scores, 95 percent of students from the top SES group (top quarter) attend college within 5 years of graduation as compared to 50 percent in the lower SES quartile. Among the second 20 percent by achievement, 84 percent of top SES students go on to college in contrast to 36 percent from the bottom SES.[39] Since income is an important component of SES, as is the parents' education, which leads in turn to higher incomes, the role of ability to pay undoubtedly accounts for some part of these observed differences in college-going propensities. So, of course, do other factors such as motivation which is also related to SES.

The same general pattern of college-going emerges from the Sewell data for Wisconsin.[40] For males from the top intelligence quartile, 86 percent plan to go to college from the top SES quartile, as compared to only 34 percent from the lowest SES quartile. For the second intelligence quartile, the percentages planning to attend college range from 69 percent for the top SES quartile to 23 percent for the bottom SES quartile. Approximately comparable patterns emerge for those who attend college and also for those graduating.

In short, the impact of family background, and particularly its ability to help finance the college education of its children —reflected in SES—shows rather clearly. This suggests that operating on the income variable may affect college-going, though clearly multiple reasons explain these patterns.

The impact of income goes beyond determining whether or not a person will go to college or, if he plans to go, which college he will attend. Family income level is also related to a variety of other aspects of student perceptions and actions. This is brought out in a striking way by Baird's recent study.[41]

Particularly intriguing is the revelation that, for college-bound high school seniors, their high school accomplishments (grades, achievements, etc.), their college goals (develop intellect, vocational training, etc.), their college expectations (car ownership, type of living accommodations, participation in extra-curricular activities, and extent of work for pay) all seem to be influenced by, or at least associated with, family income levels. Baird finds, for example, that whereas ACT scores increase slightly with income, the reverse is true for high school grades. More low income students look to college to give them professional and vocational training whereas high-income students are more likely to seek to develop their intellect. Low-income students are strongly influenced in their choice of college by financial aid offers, low cost, and closeness to home. Differences between high- and low-income students with respect to atmosphere and facilities, for example, are negligible. Also striking is the proportion of students who expect to work—75 percent in the under $5,000 group versus less than 40 percent for $20,000 and above. And fewer low-income students expect to complete a B.A.

All of these are simple relationships between family income and particular variables which might conceivably be modified somewhat in a multivariate analysis. It is suspected, however, that the strong effect of income on student plans and perceptions would remain. Hence, if some or all of the disadvantages of low family income are to be modified, the awarding of financial aid while in college is probably not adequate. Greater knowledge of financial aid to both students and parents early in high school might help to expand the range of opportunities, not only for those who are college-bound but for others who may now be deterred from college because of financial considerations.

IV. FINANCIAL COSTS OF COLLEGE

College costs are a major barrier to attendance. But, as noted, the cost components are many and varied, and how they are to be totaled is an open question. Several alternative cost definitions are explored here—the first being that used for financial need analysis, the second including the full institutional costs, and the third embracing student opportunity costs of higher education.

Financial Need Analysis Definition

The traditional approach has been to calculate the costs of college with the help of expenditure data collected through student surveys. The purpose of the cost data is to inform prospective students and their parents of the financial resources that will be necessary at the college, and to provide a basis for assessing the amount of financial aid required by students from families who are unable to provide the support needed by the children.

The focus has been on what might be termed out-of-pocket expenses, that is, those costs directly related to college attendance. These out-of-pocket costs include tuition and fees, books and supplies, room and board, travel and incidentals, expenditures for recreation, laundry, and so on. Within an institution these costs tend to vary by sex (expenses are somewhat greater for females), by resident-nonresident status (nonresidents usually pay higher tuition in public institutions), and by distance between home and college (travel costs increase with distance, and living costs are higher for students not living at home). Among institutions, costs will differ because of regional price differences which affect all of the cost items, different standards of student living which show up largely in room and board expenses and incidental expenditures, the predominant geographic origins of students which affect travel costs, and different policies and/or practices regarding the setting of tuition and fees.

No recent data exist on national patterns of undergraduate college student expenditures. The last major studies were

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[39] U.S. Department of Health, Education, and Welfare, *Toward a Long-Range Plan for Federal Support for Higher Education* (Washington: U.S. Government Printing Office, 1969), Table 1, p. 5.

[40] William H. Sewell and Vimal P. Shah, "Socioeconomic Status, Intelligence, and the Attainment of Higher Education," *Sociology of Education*, 40, (Winter, 1967), pp. 1–23, Table 2, p. 11.

[41] Leonard L. Baird, "Family Income and the Characteristics of College Bound Students," *American College Testing Research Report*, 1967.

TABLE 7.—*College Attendance Costs for Single Undergraduates, 1964–65*

Category of student	Cost Items					
	Tuition and Fees	Books and Supplies	Room and Board	Travel	Misc.	Total
Univ. of Wis.—Madison[a]						
Residents						
Males Away From Home	$ 300	$ 101	$ 809	$ 38	$ 498	$1,716
Males Living at Home	300	98	676	85	467	1,625
Females Away From Home	300	105	869	29	415	1,718
Females Living at Home	300	106	506	95	486	1,493
Nonresidents						
Males	1,000	105	935	140	524	2,704
Females	1,000	110	1,118	186	589	3,003
Univ. of Wis.—Milwaukee[b]						
Residents						
Males Living at Home	300	96	630	124	528	1,678
Females Living at Home	300	101	609	100	408	1,518
Univ. of Wis.—Centers[c]						
Residents	300	90	533	99	405	1,427
Males	300	93	463	60	301	1,217

SOURCES:

(a) L. Joseph Lins, Allan P. Abell, David R. Stucki. *Costs of Attendance and Income of Madison Campus Students, The University of Wisconsin, 1964–65 Academic Year* (Madison: Office of Institutional Studies, January 1967).

(b) Irene M. Bozak, Allan P. Abell, L. Joseph Lins. *Costs of Attendance and Income of University of Wisconsin-Milwaukee Students, 1964–65 Academic Year* (Madison: Office of Institutional Studies, March 1967).

(c) L. Joseph Lins, Allan P. Abell, Richard Hammes. *Costs of Attendance and Income of University of Wisconsin Center Students, 1964–65 Academic Year* (Madison: Office of Institutional Studies, May 1966).

TABLE 8.—*Total Student Expenditures University of Wisconsin, 1964–65*

Parents income level	Male				Female			
	Residents		Nonresidents		Residents		Nonresidents	
	Mean	*Median*	*Mean*	*Median*	*Mean*	*Median*	*Mean*	*Median*
Under $4,000	$1,634	$1,645	—	—	$1,523	$1,628	$2,245	$2,245
$4,000–$7,999	1,665	1,515	$2,425	$2,395	1,525	1,483	2,478	2,645
8,000–11,999	1,673	1,624	2,529	2,495	1,667	1,662	2,734	2,695
12,000–15,999	1,729	1,645	2,608	2,495	1,774	1,795	2,678	2,595
16,000–23,999	1,751	1,695	2,545	2,345	1,816	1,745	2,892	2,695
24,000 and over	1,712	1,695	3,072	3,028	2,188	2,195	3,225	3,145

SOURCE: L. Joseph Lins, Allan P. Abell, David R. Stucki. *Costs of Attendance and Income of Madison Campus Students, The University of Wisconsin, 1964-65 Academic Year* (Madison: Office of Institutional Studies, January 1967).

undertaken almost a decade ago.[42] High priority should be given to undertaking such a study in the near future. In the meantime, some idea of the way in which college costs vary within institutions and among related institutions is revealed by the student expenditure data collected for the University of Wisconsin. These data, while now somewhat dated, are among the most detailed and comprehensive available.[43]

Differences in expenses among different types of students are brought out in table 7. Nonresident students spend the most, largely because of tuition differences, but also because of room and board and travel costs. Females spend more than males when living away from home, but this is reversed when they live at home. Living at home is less expensive than living away from home, principally because the estimated room and board costs are less. Regional cost differences among the three types of institutions show up most clearly in room and board and miscellaneous costs.

Although there are rather striking differences in costs among the different categories of students, there is only a mild rise in expenditures by family income level within each of these categories for both male and female residents, as shown in table 8. Indeed, for resident students the costs are virtually constant except for upper income females. For nonresident students, the rise is more noticeable, with a sharp increase at the top income level. This sharp jump reflects in large part the higher cost of living accommodations sought by this group of students. This is no doubt a reflection of differing student life styles which appear to mirror differences in average family incomes.

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[42] See Ernest V. Hollis, *Costs of Attending College,* U.S. Department of Health, Education, and Welfare, 1957; and John B. Lansing, Thomas Lorimer and Chikashi Moriguchi, *How People Pay for College,* Institute for Social Research, University of Michigan, September 1960.

[43] Data for 1968–69 are now being assembled and should be available later.

TABLE 9.—*Total College Student Expenditures by Type of Institution, 1968–69*

Type of Institution	Cost Items: Tuition and Fees[a]	Cost Items: Room and Board[b]	Cost Items: Other Expenses[c]	Total Expenses[d]
	(1)	(2)	(3)	(4)
Universities				
Public				
Resident	$ 411	$ 886	$ 600	$1,897
Commuting	411	486	600	1,497
Private				
Resident	1,673	1,097	600	3,770
Commuting	1,673	697	600	3,370
Other 4-year schools				
Public				
Resident	301	747	600	1,648
Commuting	301	347	600	1,248
Private				
Resident	1,346	921	600	2,867
Commuting	1,346	521	600	2,467
Two-year schools				
Public				
Resident	137	640	600	1,377
Commuting	137	240	600	977
Private				
Resident	1,003	939	600	2,542
Commuting	1,003	539	600	2,142

SOURCES:

(a) USOE, *Projections of Educational Statistics to 1977–78*, table 49.

(b) *Ibid.* However room and board for commuting students was assumed to be $400 less than for resident students. While arbitrary, this type of adjustment has recently been employed by the College Scholarship Service.

(c) Estimate of author.

(d) Sum of columns 1–3.

What the data from these two tables suggest is that financial ability, as indicated by average family income, may have already played its role in the selection of the school to attend, and that school costs do not vary greatly by income level for relatively homogeneous groups of students.

A similar range of costs among different types of institutions at the national level in 1968-69 is revealed in table 9, based on Office of Education data and College Scholarship Service data and estimates. Differences in total costs are due to differences in tuition and fees and to differences in room and board costs. In the absence of other data it was assumed that "other expenses" were constant across institutions. The differences in overall costs are not small, with the totals running as they do from $977 for commuting students at 2-year public institutions to $3,770 for resident students at private 4-year universities.

A fuller picture of the range of costs among different institutions is provided in table 10, based on the now long outdated figures for 1963-64. This table shows tuition and fees, room charges, and board costs for major types of institutions, broken down further by public and private institutions and by sex. Cost differences between private and public schools reflect wide variations in tuition and fees and in room charges and board costs. Unfortunately, there are no data on other costs, such as transportation, which would further widen the cost discrepancies between public and private institutions.

In addition to these differences by type of institution, there are also regional differences. The only available data, again for 1963-64, are confined to tuition-fee charges. As shown in table 11, the variations are large. The totals for all institutions show that public school tuition-fees range from $141 in the West and Southwest to $298 in the Northeast, while private schools vary from $556 in the Southeast to $893 in the North Atlantic region. Most striking are the differences between private schools in the North Atlantic region and other regions. The general pattern of differences is confirmed by the October 1966 Census data.[44]

Based on these fragmentary results, student costs vary rather widely among different types of institutions, among well-defined groups of students, and by region. Obtaining a better fix on these differences will require the assembling of more up-to-date information than is now available.

Inclusion of Full Institutional Costs

One of the arguments frequently heard in popular discussions of the financing of higher education concerns the sharing of costs between students and their parents, on the one hand, and taxpayers and private donors on the other hand. Given the sharp upward trend in tuition and fees, coming as a result of legislative disenchantment with public higher education and increased fund-raising difficulties in private higher education, it is useful to know the upper bounds to possible college

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[44] U.S. Bureau of the Census, "Characteristics of Students and Their Colleges, October 1966," *Current Population Reports*, Series P–20, No. 183, Table 5, p. 14.

Table 10.—*Student Costs by Type of Institution, for Males and Females, 1963–64*

Type Institution	Cost Items Tuition and Fees		Room Charges		Board Costs		Total Expenses	
	Public	*Private*	*Public*	*Private*	*Public*	*Private*	*Public*	*Private*
Universities								
Male	$268	$1,200	$250	$345	$446	$503	$964	$2,048
Female			260	350	445	502	973	2,052
Liberal Arts Colleges								
Male	185	807	198	250	366	436	749	1,493
Female			204	259	368	448	749	1,514
Teachers Colleges								
Male	227	650	208	250	369	450	804	1,350
Female			201	239	366	481	794	1,370
Technological Schools								
Male	250	1,151	175	355	473	464	898	1,970
Female			225	389	472	464	947	2,004
Theological Schools								
Male	—	386	—	187	—	378	—	951
Female			—	184	—	377	—	947
Other Professional Schools								
Male	526	851	—	343	—	500	—	1,694
Female			—	354	—	562	—	1,707
Junior Colleges								
Male	128	526	179	166	371	356	678	1,048
Female			185	198	362	395	675	1,079

Source: USOE, *Digest of Educational Statistics, 1968,* tables 117 and 118, p. 96.

costs. Or put another way, it is useful to know how much financial aid is provided across the board to all students because of below-cost tuition charges.

Data on the full institutional costs of college education are difficult to come by. Indeed, the only known data are for California for 1965. Whereas the out-of-pocket costs of attendance at the University of California amounted to $1,850 in 1966–67, the full costs amounted to an additional $1,600, for a total of $3,450, as shown in table 12. This difference is accounted for by the fact that University of California students pay no tuition or fees to offset instructional costs and pay none of the capital costs associated with the provision of their education. Since the proportion of full institutional costs paid by students is a policy matter, the $3,450 figure indicates for 1965 the potential maximum student charge.

It is impossible to know by how much the tuition cost fig-

Table 11.—*Median Tuition and Required Fees for Full-time Undergraduate Students in Institutions of Higher Education, by Region, and by Type and Control of Institution: United States and Outlying Areas, 1963–64*

Region and Control of Institution (1)	All Instit. (2)	Univ. (3)	Liberal Arts Coll. (4)	Teachers Coll. (5)	Technological Schools (6)	Theolog. Schools (7)	Other Prof. Schools (8)	Junior Colleges (9)
United States:								
Public	$ 191	$ 268	$ 185	$ 227	$ 250		$ 526	$ 128
Private	734	1,200	807	650	1,151	$ 386	851	526
North Atlantic:								
Public	298	400	159	249	250		489	314
Private	893	1,418	1,015	1,226	1,418	413	961	713
Great Lakes and Plains:								
Public	196	286	250	237				107
Private	708	950	806	518	850	307	739	555
Southeast:								
Public	185	256	210	212	326		650	124
Private	556	1,050	624			384		446
West and Southwest:								
Public	141	232	134	199	[illegible]			68
Private	653	700	755	582	550	439	900	414

Note: Median tuition and fees for full-time undergraduate students are for the entire academic year; medians for the public institutions are for residents only.

Source: USOE, *Higher Education, Basic Student Charges, 1963–64.*

TABLE 12.—*Alternative Cost of College Estimates, University of California, 1965*

Cost Concept	Type of Student	
	Resident	Commuting
1. Financial Aid Cost of College	$1,850	$1,400
2. Full Cost of College	$3,450	$3,050

SOURCES:
Line 1—College Entrance Examination Board, *Student Financial Aid Administration Requirements and Resources at the University of California,* Volume 1—The Basic Report (1967), table 19, pp. 11-17.
Line 2—Based on line 1 plus amount of instructional and capital costs of undergraduates at the University of California borne by taxpayers; See W. Lee Hansen and Burton A. Weisbrod, *Benefits, Costs, and Finance of Public Higher Education,* table III-1, p. 42.

ures in tables 9, 10, and 11 would rise were full institutional costs substituted for tuition. Clearly, they would rise much more sharply for public institutions. But it is not unreasonable to assume that total costs might not differ a great deal between public and private schools. This is because the services provided are essentially the same, and the costs of buying the inputs (professors, supplies, buildings, and so on) do not differ that much among institutions. In any case, all costs would be much higher and probably more uniform if based on the full cost of tuition.

A set of full cost data has been developed for illustrative purposes here and for subsequent use in this study. Rather arbitrarily, it has been assumed that in private institutions tuition and fees are set at approximately 80 percent of full costs (instructional, etc., plus capital costs). It has also been assumed that full costs are identical for public and private institutions. These full cost figures were then added to the room and board, and miscellaneous cost items. The resulting estimates are shown in table 13. The biggest increases appear for public institutions which now set tuition and fees somewhere in the range of 25 percent of costs.

TABLE 13.—*Total Student Expenses by Type of Institution, 1968–69*

Type of Institution	Total Expenses Based on Out-of-Pocket Costs (1)	Total Expenses Based on Full College Costs (2)
Universities		
Public		
Resident	$1,897	$3,770
Commuting	1,497	3,370
Private		
Resident	3,770	3,770
Commuting	3,370	3,370
Other 4-Year Schools		
Public		
Resident	1,648	3,210
Commuting	1,248	2,810
Private		
Resident	2,867	3,210
Commuting	2,467	2,810
Two-Year Schools		
Public		
Resident	1,377	2,790
Commuting	977	2,390
Private		
Resident	2,542	2,790
Commuting	2,142	2,390

SOURCE: Column 1 from table 9; column 2, estimated as described in text.

Inclusion of Opportunity Costs

Little effort has been made to handle opportunity costs. In the California study, opportunity costs received explicit attention. It was assumed that in 1965 these costs amounted on average to $3,000 per year.[45]

A number of people have argued that opportunity costs, while useful in certain types of analyses, are less relevant in understanding the nature of the financial barriers to college attendance. In most cases a student does not contribute to family income anyway, and therefore the opportunity cost of attendance to the family, in terms of its income, is nonexistent. But for a number of low-income families the financial contribution of younger family members may be important, and college attendance, rather than work, would reduce, if not eliminate, this contribution. Unfortunately, there is no good body of data from which we can estimate the financial contributions to the family by young people of college age.[46]

This means that the traditional measure of the cost of college provides a minimum estimate of full costs, whereas the total costs provide a maximum estimate. Furthermore, recognition of the opportunity cost concept raises the minimum cost for potential students from lower income families, while leaving unchanged the minimum for higher income families.

V. HOW PEOPLE PAY FOR COLLEGE

How do students and their parents pay for the costs of college, given their financial resources? What is the distribution of the sources of funds used to pay the out-of-pocket costs? How does this distribution vary by type of student and by type of school?

The answers to these questions are not easy to find, largely because the data on student sources of funds are so limited.[47] The study by Hollis for the 1952–53 period indicated that parents supplied about 40 percent of the funds, 20 percent came from savings, student earnings amounted to about 26 percent, scholarships and other grants (veterans benefits, etc.) added another 9 percent, borrowing accounted for 2 percent, with the remaining 3 percent covered by gifts from others or other sources of funds.[48] The lower the family income the greater the proportion of student reporting their own earnings, and in general, the larger were their earnings. Breakdowns by type of institution indicate broadly that family contributions were significantly greater for private school students, and that the extent of borrowing was roughly similar among students at different types of schools. It should be noted that this survey was undertaken in a period when a great many male students were still benefiting from the GI Bill.

Lansing and others showed that for 1959–60 about 60 per-

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[45] W. Lee Hansen and Burton A. Weisbrod, *Benefits, Costs, and Finance of Public Higher Education,* Chapter III.

[46] Possibly the 1967 Survey of Economic Opportunity may be able to provide such data, but the underlying data are not yet available for analysis.

[47] A new national study of student sources of funds and expenditures would seem desirable, especially in view of the rapid changes in college costs during recent years.

[48] Ernest V. Hollis, *op. cit.*

TABLE 14.—*Extent of Student Concern About Financing Education by Type of Institution for all Freshmen, Fall 1968–69*

Extent of Concern	All Institutions	2-Year Colleges		4-Year Colleges					Universities	
		Public	Private	Tech. Instit.	Public	Private Non-Sec.	Protestant	Catholic	Public	Private
No Concern	35.2	37.0	42.4	50.4	29.9	39.9	30.2	30.1	34.2	38.3
Some Concern	56.3	55.1	49.8	45.9	61.0	51.0	58.0	59.9	57.5	54.6
Major Concern	8.4	7.9	7.8	3.7	9.1	9.1	11.8	10.0	8.3	7.0
Total*	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

* May not add to 100.0 because of rounding.

SOURCE: ACE, *National Norms for Entering College Freshmen—Fall 1968.*

cent of total expenses of $1,550 were met by parents, with slightly more than 20 percent met from students earnings, 8 percent from scholarships, and 7 percent from other sources.[49] Unfortunately, breakdowns by level of family income are not shown.

Jaffe and Adams provide rough data on the sources of family and supplementary sources of financing for 1965–66 high school seniors who were in college in February 1967.[50] Family income was used to meet 75 percent or more of college expenses for 54 percent of the students; the percentages of parents making this 75 percent or greater contribution rose steadily from 41 percent for families with incomes of under $5,000 to 74 percent for families with incomes of $15,000 and over. Summer earnings, other savings, loans, scholarships, and part-time employment, in that order, were the most important sources of nonfamily financing.

The ACE provides fragmentary information on financing. Students are asked about the major sources of financial support during their freshman year and about the concern they have over financing their education. Although the extent of concern—"none," "some," "major"—is not precise enough to be very informative, several general impressions can be gained. For example, as shown in table 14, eight percent of all students expressed major concern, 56 percent some concern, and 35 percent no concern. The proportion of students expressing concern (some concern and major concern) is lowest (50 percent) for students in technical institutes, and highest for students in 4-year public and sectarian colleges and in public universities. With the exception of students in the 2–year public colleges, the groups of students expressing the greatest concern are those with the lowest median family incomes.

A much larger proportion of black students—21 percent versus 8 percent of whites—expressed major concern about financing their education.[51] This concern was most marked among black students in predominately white 4-year colleges and in predominately black 4-year colleges.

Similar difficulties arise in interpreting the overall ACE responses indicating the source of major support—personal savings or employment, parental or family aid, repayable loan, and scholarship/grant/or other gift. In general, the more expensive the school (indicated by being private) and the higher the family income, the greater is the dependence on parental contribution. The proportion of students reporting personal savings or employment source of funds, among students at public institutions, is about equal to the proportion reporting scholarship, a grant, or gift funds among the students at private institutions. This suggests that the major financial aid resources (at least grants) reside in private institutions and that student-generated aid through employment (either in the summer or the school year) is utilized more heavily by students at public institutions, given the absence of greater amounts of scholarship/grant/gift funds.

The dependence of black students on outside financial assistance emerges much more sharply in the data on major sources of financial support. Twice as large a percentage of blacks as whites—62 percent compared to 30 percent—rely upon loans and scholarship/grants/gifts. In the predominately white 4-year colleges (many of them expensive private schools) 80 percent report major sources other than their own or their parents, and 66 percent in the predominately black 4-year colleges report such sources of funds. The respective percentages for whites are 39 percent and 51 percent. This latter result indicates that whites attending predominately black 4-year schools are probably as poor as the blacks.

What is missing are cross tabulations of the extent of concern and of sources of student support by estimated parental income level. Such tabulations would make it possible to pinpoint more precisely the role of family income in giving rise to expressions of concern about financing and at the same time shed light on the extent to which student financial aid works to lessen expressions of concern about financing problems. With the abundant ACE data, it should be possible to have such tabulations made.

The Astin-Panos study shows percentage distributions of different types of finance. For males, for example, about 50 percent of total support came from parents; their own earnings added another 20–25 percent, with the balance coming from scholarships, loans, and other sources. The proportion of students benefiting from scholarships and loans is revealing. Almost 95 percent had no Federal scholarships, 88 percent had no State or local scholarships, and 70 percent had no college scholarships. The percentage of students with loans from State-local governments, colleges, commercial, and other sources, ran between 5 and 8 percent. However, 21 percent had Federal loans. An area of useful further research would be a more careful examination of the Astin-Panos data, even though the allocation of grants and loans by income level of the student may have changed greatly since the data were collected.

There is little evidence to suggest that families do much financial planning in preparation for the enrollment of their children in college. In the now dated study by Lansing and others, it was found that almost half of all families were setting aside funds for their children's college education. It seems probable that with the growing emphasis on college attendance, a greater proportion of parents would be engaging in planning how they can best cope with the costs of college. A repeat of the Lansing study would be useful in providing new benchmark data.

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[49] John B. Lansing, Thomas Lorimer, and Chikashi Moriguchi, *op. cit.*

[50] A. Jaffe and W. Adams, *American Higher Education in Transition*, Bureau of Applied Social Research, Columbia University, April 1969, (mimeo), Table 10, p. 189.

[51] Bayer and Boruch, *op. cit.*

VI. FINANCIAL AID

This section reviews what we know about financial aid—the different types of aid, the amounts available, and the distribution of that aid.

Types of Financial Aid

A brief recapitulation of the different types of financial aid follows. For more detailed coverage, the reader is referred to Nash.[52]

Grants

Grants represent simple transfer of funds to students. In some cases grants are in recognition of excellent scholarship and potential. Then they are called scholarships. In other cases, they recognize performance and are at the same time tied to family financial background. Then they are called grants-in-aid. In still other cases, money goes to students who meet the qualifications set up by the grantors of the money, i.e., interest in a special field, geographic origins, etc. Grant funds come largely from private donors and in some cases from State sources. Only recently have substantial Federal funds become available for undergraduates, largely through Educational Opportunity Grants.

Loans

The sources of loan funds are somewhat more varied. Colleges themselves have typically had small amounts of money available for loan purposes. In addition, private borrowing has always been possible, but this market has not operated very effectively, given the administrative problems and the risks which exist. Some States have maintained subsidized loan programs for a number of years. In the past decade the Federal role in providing loans has greatly increased, initially through the National Defense Education Act of 1958 and later through the Guaranteed Loan Program under the Higher Education Act of 1965.

Work

Work as a source of financial support has a long tradition. This activity has been organized and operated by the colleges themselves. The financial aid officer works in concert with the student employment office to give financially needy students jobs, usually on campus. However, the Federal Government moved into this area, first in the 1930's and more recently with the College Work-Study program in 1964.

Interrelationships Among Types of Financial Aid

Financial aid officers typically try to spread their all too limited grant money by developing financial aid packages, embracing grants, loans, and work. Various formulas have been developed and applied, such that a loan of up to some amount will be made, to be supplemented if necessary by earnings in some specified amount (obtained through work), and finally to be rounded out by a grant. Of course, all of this is contingent upon the amounts of the different types of aid which are available relative to the determination of financial need.[53]

Source of Aid

It is important to distinguish between financial aid which is funneled through colleges and universities and that which goes directly to the individual students. Certain State and Federal grant programs designed to facilitate college-going channel their money directly to students. This is the case with VA benefits under the GI Bill and Social Security Administration educational benefits for college age children.[54] In addition, a substantial portion of State and Federal loans, including guaranteed loans, do not go through the hands of the college financial aid officers. Finally, student initiative in securing part-time employment, for example, augments his resources and substitutes for financial aid which is usually too limited to take care of all financial need.

The reason for mentioning these points is that some of these sources of funds may be reported in the student financial aid application, and thus affect the amount of the award and the nature of the financial aid package, while in other cases they may not be reported. By way of illustration, GI Bill and SSA benefits are likely to be reported and, because they augment student resources, estimated financial need will be less. Private grants may or may not be reported, though in principle they should be. Noncollege administered loans, often taken out only as a last resort, probably will not be figured into the calculations. Much the same holds for employment sought out and obtained by the individual student.

Because of the variety of sources, it is difficult to define student financial aid—grants, loans, and work—in other than some arbitrary way. Clearly, the amount provided through the colleges will be less than the total amount provided. But how that total amount is to be defined and estimated remains an unresolved question.

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[52] See George Nash's extremely comprehensive and useful paper in the *Encyclopedia of Educational Research* (4th Edition, 1969), pp. 1339–1359. Also see U.S. Office of Education, "Financial Aid for Higher Education," (1969).

[53] The "packaging" of financial aid is a topic about which little is known. The Cartter panel set up by the College Scholarship Service is studying this and related questions. For some references to already completed work, see Nash, *op. cit.*

[54] It might be debated whether expenditures under these programs should be classified as "financial aid." Although the funds do assist people in college, the reasons for establishing such programs are relevant. For example, the GI Bill can be viewed as a deferred payment for military service in which people are undercompensated, and the SSA payments represent a part of the payment from "social insurance." In this sense, the funds represent compensation rather than financial aid as such.

Definition of Financial Aid

Thus far, the customary definition of financial aid—grants, loans, and work—has been accepted. All these sources of funds assist students in attending college. If, however, there is concern with the extent of subsidization of college students, then financial aid must be defined differently. Accordingly, all grants, employment which is of a "make-work" variety (essentially, the student is paid even though his productivity is negligible), and the interest subsidy on loans should be included. The excluded elements—other employment and loans—require an exchange of present or future effort for current funds. While the availability of these types of funds may be critical in permitting more students to attend college, the student beneficiaries are not by any means receiving a free gift.

In light of this discussion, it will be useful later on to look carefully at the distribution of all student financial aid as well as that which provides a direct subsidy to students.

Amounts of Undergraduate Financial Aid

The total amount of financial aid available is not known with precision, given the fact that much of it is not caught through institutional reporting systems. Probably the best global estimate is that for 1966–67 prepared by Nash for the College Scholarship Service; detailed institutional data for that year have since become available from the Office of Education. Total financial aid for undergraduates amounted to almost $1.4 billion, as shown in column 1 of table 15. Grants comprised almost half of these funds. Financial aid provided through institutions of higher education (column 2) totaled about $900 million, with over 40 percent in the form of grants.

TABLE 15.—*Undergraduate Student Financial Aid by Type and Source, Academic Year 1966–67*

(in millions of dollars)

Type of Aid	All Sources	Source Administered by Institutions of Higher Education
	(1)	(2)
Grants	$ 607	$375
Employment	340	286
Loans	447	242
Total	1,394	903

SOURCES:

Column 1—*A Study of Federal Student Loan Programs*, College Entrance Examination Board, 1968, table 2, p. II–4.

Column 2—Unpublished USOE data.

The Federal contribution of $820 million to total financial aid resources is detailed in table 16. About half of all Federal program money went through institutions of higher education. Overall, 60 percent of all financial aid funds were provided through federally assisted programs, as shown by a comparison of the two tables. Within institutions, Federal funds amounted to about 45 percent of total institutional funds.

The differences between total financial aid resources and those administered by institutions bear mention. Keeping in mind the fact that the overall totals may be subject to some errors, the biggest differences one sees are in grants and loans. In the grant category, this is largely the result of the inclusion of VA and Social Security payments (about $200 million) in the overall total, and in the loan category it arises from the impact of guaranteed loans which do not go through institutions.

TABLE 16.—*Federal and Federally-Assisted Undergraduate Student Financial Aid by Type and Source, Academic Year 1966–67*

(in millions of dollars)

Type of Aid	All Sources	Source Administered by Institutions of Higher Education
	(1)	(2)
Grants	$256	$ 84
Employment	143	123
Loans	422	200
Total	821	407

SOURCES:

Column 1—*A Study of Federal Student Loan Programs*, College Entrance Examination Board, 1968, table 1, p. II–2.

Column 2—Unpublished USOE data.

More recent data are not yet available on total or institutional financial aid. It is known, however, that most programs and sources of funds have been expanding. For example, GI Bill benefits have increased, State scholarship and loan programs have grown, and the volume of Federal guaranteed loans awarded has risen sharply in the past several years. Illustrative of this rise are the following data culled from a variety of sources:

Selected financial aid programs	FY 1967	FY 1968	FY 1969
		(In millions of dollars)	
Federal guaranteed loans awarded	$248	$436	$672
Veterans benefits—college only	175	271	350
Social Security benefits to college students	323	382	n.a.
War orphans	29	33	34
State scholarship programs	83	160	131

Distributional Impact of Selected Programs

The impact of recent thinking, reflected in much of the new legislation, has been to channel aid to students from low-income families. No comprehensive data on the distributional impact of all financial aid or even of State and Federal aid are available. But there are several bodies of data that illustrate what is happening.

The magnitude of the Federal student aid programs in 1968 and 1969 is shown in a series of tables. First, table 17 shows the amounts of funds available, the average size of the award, and the number of students benefiting. The unduplicated total of students aided—1.6 million—amounts to about one-third of all full-time undergraduates.

The distribution of Federal aid under four types of programs, to students by family income category, is shown in table 18.[55] It seems apparent that the Educational Opportunity Grant program works most effectively in overcoming

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[55] "Gross Income" is analogous to the concept of family income given in the data used throughout this study.

TABLE 17.—*Federal Student Aid Programs, Fiscal Year 1969*

	Insured Loans	CWSP	EOG	NDSLP
Obligations	$686,675,781*	$143,434,176	$144,786,721	$182,904,173**
Average Award	872	475	500	600
Number of Students Aided	787,344	385,000	271,471	442,000

* Total lending level.

** Includes only Federal contributions to loan fund.

SOURCE: Bureau of Higher Education, U.S. Office of Education.

financial barriers, followed closely by the College Work-Study program and the National Defense Student Loan program. Federally insured loans, by contrast, are almost uniformly distributed across income categories. This finding isn't necessarily surprising, since family needs for additional funds vary rather widely. Low-income students are heavily over-represented in the loan distributions, meaning that much larger percentages of them are receiving loans than is the case for upper income students.

TABLE 18.—*Percent Distribution of Students by Gross Family Income Category*

Income Category	Insured Loans* FY 1969	FY 1968 CWSP	FY 1968 EOG	FY 1968 NDSLP
$ 0–$ 2,999	10.0	28.6	29.0	22.0
3,000– 5,999	16.9	32.6	40.0	28.0
6,000– 7,499	11.6	16.0	16.0	16.0
7,500– 8,999	11.0	10.6	10.0	13.0
9,000– 11,999	22.4	12.8	5.0	21.0
12,000– 14,999	16.1			
15,000 and above	12.0			
Total percent	100.0	100.0	100.0	100.0

* Based on a sample of loans.

SOURCE: Bureau of Higher Education, U.S. Office of Education.

Table 19 shows the percentages of students by race who receive aid in each of these programs. American Negroes receive substantial help (in all but the Insured Loan program), largely because of the much lower family incomes of black college students. It is, however, this same lower income position which limits their access to loans.

TABLE 19.—*Percent Distribution of Students Aided by Race, Fiscal Year 1968*

	Insured Loans	CWSP	EOG	NDSLP
Racial Category				
American Negro	6.5	17.7	17.9	14.4
American Indian		.3	.3	.3
Oriental American		.8	.7	.6
Spanish Surnamed American		3.0	3.2	2.4
Other	93.5*	78.2	77.9	82.3
Total percent	100.0	100.0	100.0	100.0

* Includes nonresponse rate of 5.9 percent.

SOURCE: Bureau of Higher Education, U.S. Office of Education.

The similarity in the impact of Federal and State loan programs is brought out in table 20. In viewing this table, the reader is cautioned that the concept of family income, "adjusted family income level," differs from "family income" or "gross family income." The "adjusted family income" makes allowance for family size, taxes, and other considerations; and hence an "adjusted family income" of say $3,000 may be equivalent to a "family income" of several thousand more than that.

Interestingly, the State programs (column 3) are not as closely geared to income as the Federal program, although this may in part reflect the fact that some of the wealthier States have the most flourishing loan programs. It is also interesting to observe that the size of the loans (columns 2 and 4) increases slightly with income. The reason for this is not fully clear, though it probably reflects the fact that students from higher income families attend more expensive colleges so that their financial need rises faster than family income.

The distribution of these loans by race is striking. Of the

TABLE 20.—*Distribution and Average Amount of Federal and State Guaranteed Loans, by Adjusted Family Income Level, as of early 1969*

Adjusted Family Income Levels	Federal Loans		State Loans	
	Percentage Distribution	Average Amount of Loan	Percentage Distribution	Average Amount of Loan
	(1)	(2)	(3)	(4)
Under $3,000	27	$782	15	$696
$ 3,000– 5,999	28	811	21	709
6,000– 8,999	25	843	25	750
9,000–11,999	13	860	23	800
12,000–14,999	6	908	14	844
15,000 and Over	2	924	1	874
	100	824	100	759

SOURCE: U.S. Office of Education unpublished data, based on sample of 1968 processed loans. Note: Some of these loans went to fifth-year students, but the amounts did not exceed 15 percent of the total for either program.

Federal loans, slightly above 4.5 percent of the loans and over 4 percent of the loan funds went to blacks. Of the State loans, 6 percent of the loans and 5 percent of the loan funds went to blacks. This means that loans to blacks were generally smaller, $765 versus $823 in the Federal program, and $597 versus $772 in the State programs.

The Office of Education has also gathered data on the racial distribution of financial aid provided through a number of its programs which are funded through the colleges—the National Defense Student Loan program (NDSL), Educational Opportunity Grant program (EOG), College Work-Study program (CWS), and NDEA Loans funded by Educational Opportunity Grant money. The data, which are for 1967-68, show that 700,000 students benefited from one or more of these programs. Some students participate in one program, some in all three. The total amount of funds was $456 million—$92 million in EOG.

The breakdown by racial or ethnic group and type of institution is shown in table 21. The "All Other Students" are over-represented relative to members of other minority groups, in terms of both numbers of participants and amount of funds. The participation rates of the different racial and ethnic groups can be calculated on a very rough basis, if it is assumed that the financial aid goes to full-time students. Overall, about 14 percent of all full-time undergraduates are benefiting. Of the approximately 280,000 full-time black undergraduate students, about one-third of them (94,000) are participating; 1,700 or 24 percent of the approximately 7,000 American Indian students are participating; and 574,000 or roughly 13 percent of whites are participating. There is not sufficient data to give estimates for the other two groups—Oriental Americans and Spanish-Surnamed Americans.

In view of the eligibility requirements for these programs—they are open largely to students with very low parental incomes—the vast bulk of financial aid goes to lower income students.

Financial Aid Resources by Type of Institution

The distribution of financial aid resources by type of institution is also of interest. Accordingly, estimates of total financial aid administered by type of school are made, using two different estimating procedures. First, the official USOE data for undergraduate financial aid by type of institution are presented. Second, these figures are augmented by the subsidized portion of their tuition and fees, as spelled out in the previous section.

Earlier, the question was raised about the appropriateness of defining student financial aid to include, in addition to the traditional grants, the amounts provided through work experience and loans. These latter types of aid are qualitatively different, for they impose current or future obligation on the recipients. Accordingly, the breakdown by type of aid is also shown.

The amounts of financial aid by type of institution, based on the two different conceptions of financial aid, are presented in table 22. The traditionally defined amounts of financial aid are shown to vary widely among schools (column 1); the average per student figures (column 5) make the discrepancies among institutions more apparent. On an absolute basis, private universities and other private 4-year schools have the most bountiful resources per student. The distribution of aid by type of aid also is shown to vary among institutional types. Private schools (except for 2-year schools) have a preponderance of their aid in the form of grants. Public universities rely heavily upon work, whereas the aid of other public schools is more evenly distributed by type.

Quite a different impression is obtained from the right-hand side of table 22, which considers traditional financial aid plus that provided in the form of below-cost tuition. This subsidy is included under the grant category. Financial aid at public institutions increases very sharply, with virtually all of it in the form of grants. The average amount of aid per student

TABLE 21.—*Number of Participants in Federal Financial Aid Programs by Racial or Ethnic Group, 1967-68*

Type of Instruction	Type of Students					Total Students	Total Funds (in millions of dollars)
	American Negro	American Indian	Oriental American	Spanish Surnamed American	All Other Students in Program		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Universities							
Public	8,154	422	1,720	3,084	150,772	164,152	$118.0
Private	3,816	34	543	840	56,210	61,443	54.0
Total	11,970	456	2,263	3,924	206,982	225,595	172.1
Other 4-Year Schools							
Public	37,873	889	828	4,603	155,988	200,181	114.3
Private	35,515	160	816	4,989	154,494	191,974	134.6
Total	73,388	1,049	1,644	9,592	310,482	392,155	248.9
Two-Year Schools							
Public	9,811	147	574	4,051	46,149	60,732	26.5
Private	3,109	88	105	429	10,616	14,347	9.0
Total	12,920	235	679	4,480	56,765	75,079	35.5
Total Public	55,838	1,458	3,122	11,738	352,909	425,065	258.8
Total Private	38,440	282	1,464	6,258	221,320	267,764	197.6
All	94,278	1,740	4,586	17,996	574,229	692,829	456.4

SOURCE: Unpublished U.S. Office of Education data.

Table 22.—*Undergraduate Student Financial Aid by Type of Aid, Type of Institution, and Concept of Aid, 1966–67*

Type of Institution	Usual Definition of Financial Aid					Financial Aid, Including Below Cost Tuition Subsidy Grant				
	Total	Grants	Work	Loans	Average Per Student[a]	Total	Grants	Work	Loans	Average Per Student
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
		(in millions of dollars)			(in dollars)		(in millions of dollars)			(in dollars)
Universities										
Public	$262	$85	$115	$62	$196	$2,448	$2,363	$115	$62	$2,076
Private	137	84	21	32	395	305	221	21	32	659
Total	399	169	136	94	237	2,753	2,584	136	94	1,539
Other 4-Year Schools										
Public	180	55	67	58	149	1,556	1,501	67	58	1,529
Private	275	136	58	81	303	643	507	58	81	697
Total	455	191	125	139	215	2,199	2,008	125	139	1,134
Two-Year Schools										
Public	36	10	20	6	42	771	761	20	6	1,238
Private	13	5	5	3	107	38	33	5	3	325
Total	49	15	25	9	50	809	794	25	9	1,093
Total Public	478	150	202	126	140	4,775	4,625	202	126	1,609
Total Private	425	225	84	116	309	986	761	84	116	656
All	903	375	286	242	189	5,761	5,386	286	242	1,289

Note: (a) Based on full-time enrollments.

Source:

Columns 1–4: USOE, unpublished data.

Column 5: calculated.

Columns 6–10: derived by author.

rises from $189 to $1,289 overall, and from $140 to $1,609 in public institutions. Clearly, this definition of student aid provides a vastly different picture of what is involved.

VII. FINANCIAL COSTS OF COLLEGE, FINANCIAL NEED, AND FINANCIAL AID—THEIR INTERRELATIONSHIPS

An effort is made in this section to draw together information on the financial costs of college attendance, the need for financial aid as reflected by family income, and the extent to which financial aid fills the gap between needs and costs. The information on college costs, family incomes, and financial aid has been developed in previous sections.[56] The only remaining task is to estimate total financial need. In doing this and in merging the results, the most recent available data are used for the academic year 1966-67.[57]

One important limitation to this analysis should be mentioned. Only financial aid granted through institutions of higher education is included because the distribution of other forms of aid by type of institution of the recipient is not known. Since total financial aid exceeds that granted through institutions, financial need is overstated in the analysis that follows. Nevertheless, the analysis is suggestive of what the more complete results might reveal.

Financial need varies with the cost of education and the financial position of the family, as reflected by family income. But because estimates must be developed for a variety of institutions, an estimate must first be made of how much families can contribute to the cost of their children's education. This is covered by the work of the College Scholarship Service. The CSS estimates parental contribution on the basis of extensive studies of family budgets and the amounts of resources required by families to meet their other needs. The residual is the amount that can be contributed to pay college costs. This amount is not a rigid figure, but rather is to be used by financial aid officers in conjunction with other information in arriving at the amount of financial aid to be awarded. For simplicity, it shall be assumed that the so-called standard case applies, i.e., the family income structure and expenditure pattern is a relatively uncomplicated one. In addition, it shall be assumed that each family has two children, in the absence of any better information.

The amount of expected parental contribution for different family income levels that applied in 1966-67 is shown in column 1 of table 23. As can be seen, the average contribution rate (column 2) starts at 5.3 percent ($4,500) and then almost doubles again by the $15,500 income level. More illuminating is the marginal contribution rate (column 3) which is regressive at the lower income levels, but then becomes progressive as income rises above $9,500.

With information on expected parental contribution, the total financial needs of students can be estimated for both

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[56] Actually, data for 1966–67 are used here so as to provide comparability with the financial aid data which are available for 1966–67. It is necessary to assume that the ACE family income data apply to all undergraduates, not just freshmen.

[57] Financial aid data for 1967–68 will permit an updating of this analysis.

TABLE 23.—*Expected Parental Contribution to College Costs Based on College Scholarship Approach for 1966–67 Academic Year**

Parental Income	Expected Parental Contribution	Average Contribution Rate	Marginal Rate Contribution
$2,500	$ 0	0	0
3,000	0	0	0
4,500	240	5.3	24.0
5,500	470	8.5	23.0
6,500	690	10.6	22.0
7,500	890	11.9	20.0
8,500	1,130	13.3	24.0
9,500	1,380	14.5	24.0
10,500	1,660	15.8	28.0
12,500	2,240	17.9	30.0
15,500	3,220	20.6	34.0
18,500	4,340	23.5	40.0
20,500	5,300	25.8	51.0

*NOTE: It should be pointed out that in 1968 CSS revamped its formula, with the result that expected parental contributions dropped above the $9,000 income level. This served to increase measured financial aid for higher income families.

SOURCE: College Scholarship Service. Based on two-parent families with two dependent children, and no financial complications.

residents and commuters attending institutions with different cost structures. This involves subtracting the parental contribution at each income level from the cost of college, and then summing these costs for the number of students at each income level and then over all the relevant income levels.[58]

The results of this exercise, using the conventional out-of-pocket definition of college costs, are presented in table 24. Column 1 gives the number of full-time students enrolled in 1966-67. Column 2 shows college costs to students for the total number of students enrolled in each type of institution—the grant total is almost $8 billion. Column 3 shows estimated financial need of $2.3 billion provided through all institutions of higher education. The available financial aid, given in column 4, amounts to $0.9 billion. Thus, financial need equals about three-tenths of total student college expenses, while financial aid offsets about four-tenths of total financial need.

Differences among types of institutions with students in financial need relative to college costs are not as great as had been anticipated. Financial need constitutes only a slightly larger fraction of total college costs (column 5) in private as constrasted with public institutions. However, given the higher costs of college, average financial aid per student enrolled is considerably greater. Differences between public and private schools by type of school are minor, except at 2-year schools.

But whereas private institutions show greater relative financial need, the discrepancy between public and private schools in the extent to which available financial aid helps to meet financial needs is reversed (column 6). Aid offsets 41 percent of financial need in public institutions as compared to 36 percent in private schools. Indeed, public universities are able to do better than private universities in meeting student financial need, covering 46 percent of need versus 33 percent for private universities. A similar disparity occurs for 2-year schools. Only in the other 4-year institutions is there little or no difference between public and private schools.

It is important to observe, however, that while the percentage of financial need to college costs (column 5) does not differ greatly by type of institution—university, other 4-year, and 2-year—the availability of financial aid (column 6) drops rather sharply from universities and other 4-year schools to 2-year schools. Whether any conscious policy decisions in the allocation of Federal funds produce this result remains unclear, but it is entirely conceivable that because larger proportions of students in 2-year schools are likely to be working, and therefore show less need, that commensurately smaller funds have been solicited. More important, it would seem, is the fact that 4-year schools and universities simply have greater total resources to work with and accordingly have allocated larger proportions to student aid programs.

How much of this financial aid actually goes to meet financial need is not at all clear. One might hope that the vast bulk of it would serve that purpose. Yet we know that traditionally much financial aid has been a reward to the best, not necessarily the neediest, students. It would be expected that private schools, because of their higher tuition, would be allocating a higher proportion of their financial aid resources to meet financial need. However, this is at best speculation.

It seems imperative, therefore, to learn more about the distribution of financial aid with respect to the extent of financial need of individual students. Not only do we want to know this by type of institution, but we also need to know the extent to which financial aid is allocated to individual students with different degrees of financial need. For example, the financial aid money might be in fact allocated roughly across the board among needy students, instead of being allocated in proportion to need.

In an earlier section, estimates were given of the costs of college which took account of the full institutional costs of providing college education. Let us examine how the use of this broader cost concept affects our results. These new results are given in table 25. From column 2 it can be seen that total college costs have leaped from slightly under $8 billion to almost $13 billion; that financial need (column 3) has risen to $5.5 billion; and that financial aid (column 4) has gone up to $5.8 billion. This makes financial need as a percentage of total costs rise to 43 percent overall (column 5) with 104 percent (column 6) of need taken care of by available financial aid which now includes handsome tuition subsidies. What has happened is that college costs rise, on the assumption that everyone pays full costs. Similarly, financial need increases because students are no longer given across-the-board financial aid in the form of tuition-fee reductions. But financial aid increases faster than college costs.

While the discrepancy between total financial need and available financial aid is about $1.45 billion in table 24, this discrepancy drops to about $0.2 billion in table 25. A decline occurs because, according to the family contribution scale, many families—those with higher incomes—are able to contribute more to the expenses of college than is required by the financial need calculations when based on much lower tuition levels. Put another way, by having lower tuitions a

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[58] We assume that there is a $500 reduction in living costs for those students who live at home. We also assume the following enrollment makeup: 4-year public, 30 percent commuting; 2-year public, 100 percent commuting; 4-year private, 40 percent commuting; and 2-year private, 50 percent commuting. See College Entrance Examination Board, *A Study of Federal Student Loan Programs*, 1968, p. II–5.

TABLE 24.—*Total College Expenses, Financial Need, and Financial Aid of Institutions of Higher Education, Based on Out-of-Pocket College Costs. Undergraduates Only, by Type of School, 1966–67*

Type of School	Full-time Undergraduate Students (in thousands) (1)	Total College Expenses (in millions of dollars) (2)	Financial Need (in millions of dollars) (3)	Financial Aid (in millions of dollars) (4)	Percentage of Financial Need to Total College Expenses (5)	Percentage of Financial Aid to Financial Need (6)
Universities						
Public	1,326	$2,113	$ 567	$ 262	27	46
Private	463	1,337	414	137	31	33
Total	1,789	3,450	981	399	28	41
Other 4-Year Schools						
Public	1,018	1,362	460	180	34	39
Private	922	2,211	667	275	30	41
Total	1,940	3,573	1,127	455	32	40
Two-Year Schools						
Public	623	661	153	36	23	24
Private	117	237	89	13	38	15
Total	740	898	242	49	27	20
Total Public	2,967	4,136	1,180	478	29	41
Total Private	1,502	3,785	1,170	425	31	36
All	4,470	7,921	2,350	903	30	38

SOURCES:

Column 1—USOE, *Opening Fall Enrollments,* 1966.
Column 2—Column 1 times out-of-pocket expenses estimated for 1966–67 in same fashion as for 1968–69; see table 12.
Column 3—Estimated by applying CSS schedule of estimated parental contribution to 1966 ACE National Norms data.
Column 4—Table 17, column 1.
Column 5—Column 3 divided by column 2.
Column 6—Column 4 divided by column 3.

TABLE 25.—*Total College Expenses, Financial Need, and Financial Aid of Institutions of Higher Education Based on Total College Costs (Total Institutional Costs Plus Living Expenses). Undergraduates Only, by Type of School, 1966–67*

Type of School	Number of Students (in thousands) (1)	Total College Expenses (in millions of dollars) (2)	Financial Need (in millions of dollars) (3)	Financial Aid (in millions of dollars) (4)	Percentage of Financial Need to Total College Expenses (5)	Percentage of Financial Aid to Financial Need (6)
Universities						
Public	1,326	$4,309	$2,020	$2,448	47	121
Private	463	1,506	517	305	34	59
Total	1,789	5,815	2,537	2,753	43	109
Other 4-Year Schools						
Public	1,018	2,738	1,450	1,556	53	107
Private	922	2,479	826	643	33	78
Total	1,940	5,217	2,276	2,199	43	96
Two-Year Schools						
Public	623	1,396	584	771	42	130
Private	117	262	105	38	40	36
Total	740	1,658	689	809	42	117
Total Public	2,967	8,443	4,054	4,775	48	117
Total Private	1,502	4,247	1,448	986	34	68
All	4,470	12,690	5,502	5,761	43	104

SOURCES:

Column 1—Same as table 24.
Column 2—Column 1 times total expenses estimated for 1966–67 in same fashion as for 1968–69; see table 12.
Column 3—Estimated by applying CSS formula of estimated parental contribution to 1966 ACE National Norms data.
Column 4—Table 17, column 2.
Column 5—Column 3 divided by column 2.
Column 6—Column 4 divided by column 3.

good deal of financial aid—about $1.7 billion per year—is being provided by institutions of higher education to people who are not in need of such aid.[59] This financial aid could be diverted to those who are needy, thereby greatly reducing the gap between total need and total resources.

The most dramatic change occurs for public institutions, where available aid (column 6) rises from 41 to 117 percent of financial need. There is also a sizable but much less dramatic increase for private institutions, from 23 percent to 68 percent. Hence, private colleges, through their continued below-cost pricing system, also implicitly distribute a good deal of financial aid to people who do not require it.

The policy implications of this analysis based on a broader cost concept are rather clear. One might argue for full-cost pricing as a means of augmenting financial aid resources, since it is apparent that much could be done to close the financial aid gap. But there are some side effects that have to be considered.

In the case of public institutions, the additional tuition and fee income might simply be appropriated by the State legislature, with the result that the financial aid gap would remain unchanged. In the case of private institutions, donors might become somewhat less free with their contributions as they find their colleges charging full costs. And so, much of the additional tuition revenue would have to be earmarked specifically for student financial aid, if it is to ease the financial need of many currently enrolled students and/or to make it possible for students to enroll who previously could not do so for financial reasons. This means that taxpayers and donors cannot expect much in the way of released resources, either to finance other programs or to reduce the level of support needed for higher education. Nor can college administrators and faculty hope to employ these resources for other improvements within the system. In short, income will be redistributed in part toward taxpayers and donors, but the bulk of the redistributive effect will be from the families of college students who can pay, to actual and potential college students who cannot pay or who have difficulty paying. One side effect may be to cause a shift in the distribution of the college population to more lower income students and fewer higher income students. Should this be the case, the additional tuition revenue collected from the now-fewer wealthy students may not be sufficient to carry along the now-increased numbers of poorer students, so that additional funds would be required from other sources.

The point of this discussion is that the availability of financial aid varies and depends upon how one defines it. A recognition of the substantial amounts of financial aid provided through below-cost tuition helps to sharpen our view of the nature of the financial barriers to college and of ways of circumventing them.

VIII. ILLUSTRATIVE ESTIMATES OF ADDITIONAL FINANCIAL AID NEEDED

To the extent that additional financial aid would induce more college-going, this means that any "gap" between estimated financial need and now-available financial aid resources is underestimated. Since no method exists for estimating with any precision how many more students would enroll were more aid available, several crude estimates shall be provided to illustrate the possible need for additional student financial aid.[60]

Assume that because of the unavailability of more aid, many students cannot attend college. It might be assumed on the one hand that if there were no financial barriers, the percentage of students from each family income class would be equal to the percentage of students already attending from the highest income class. Alternatively, it might be assumed that the percentage enrolling in each family income class would be at least equal to the current overall percentage of college-age students attending. Given these two assumptions, what do they suggest for the size of the gap between financial need and financial aid?

To estimate the possible magnitude of financial need, we employ data on the numbers and percentages of college-age young people attending college in October 1967. These data are of the same type as those presented in table 2 for October 1968. A family's ability to pay can be taken from table 23 for the 1966–67 academic year. It can be assumed that on average the total costs of college, reflecting the existing mix of public-private, 2-year-4-year, commuter-resident students, amount to $2,240.

With this information, the amount of financial need can be calculated. Panel A of table 26 shows the procedures used, with the estimate of "Total Financial Need" based on enrollments in October 1967, given in column 6. Total financial need is $2.35 billion, identical to that presented in table 24, column 3.

If the extreme assumption is now made that were it not for financial barriers, the percentage attending would equal that for the highest income class, 67 percent, then the results shown in panel B are derived. Total financial need is now $5.72 billion—over double that which exists now. A more plausible case is that the percentage enrolled will at least equal the overall average percent enrolled (35 percent). As shown in panel C, "Total Financial Need" in this case amounts to $3.14 billion.

The three estimates can now be compared—the latter two purely illustrative—with available financial aid of $0.9 billion in 1966-67 (table 24, column 4) which was channeled through institutions. Financial aid, as a percentage of financial need, falls from 38 percent (panel A) to 16 percent (panel B) and to 28 percent (panel C). These calculations indicate that the financial aid provided through colleges falls far short of that required to come anywhere near meeting financial need. It should be reiterated, of course, that half again as much aid was provided directly through other sources. Moreover, the additional aid provided through below-cost tuition is not taken into account in these calculations.

In summary, the analysis presented here, while illustrative, gives a sense of the extent to which financial barriers may reduce college attendance, especially among lower income families. It suggests that barring any dramatic change in the

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[59] Estimated by subtracting differences in financial need in tables 24 and 25 from differences in financial aid in the same tables.

[60] I am indebted to Robert Hartman for suggesting that I make these calculations.

TABLE 26.—*Illustrative Estimates of Financial Need Under Alternative Assumptions about Nature of Financial Barriers, 1966–67*

1967 Family Income	College-Age Population Age 18–24 (millions) (1)	Percent Attending College (2)	Number Attending College (millions) (3)	Family Ability to Pay (4)	Financial Need [$2240–(4)] (5)	Total Estimated Financial Need (in millions of dollars) (3) x (5) (6)
Panel A—*Financial Need Based on Existing Enrollment*						
Under $3,000	824	15	109	0	$2,240	$244,160
3,000– 4,999	1,120	23	257	100	2,140	549,980
5,000– 7,499	1,703	32	550	635	1,605	882,750
7,500– 9,999	1,527	43	664	1,190	1,050	697,200
10,000–14,999	1,695	51	861	2,240	—	—
15,000 and Over	934	67	622	3,500	—	—
	8,833	35	3,063			2,374,090
Panel B —*Financial Need Based on Assumption Percent Enrolling is the Same For All Income Classes as for Highest Income Class* Assume Max. — 67% for top income group						
Under $3,000	824	67	552	0	2,240	1,236,480
3,000– 4,999	1,120	67	750	100	2,140	1,605,000
5,000– 7,499	1,703	67	1,140	635	1,605	1,831,305
7,500– 9,999	1,527	67	1,023	1,190	1,050	1,043,460
10,000–14,999	1,695	67	1,136	2,240	—	—
15,000 and Over	934	67	626	3,500	—	—
	8,833	67	5,228			5,716,245
Panel C—*Financial Need Based on Assumption Percent Enrolling is at Least Equal to Overall Percentage Now Enrolled* Assume Max. — 35% for lower groups						
Under $3,000	824	35	288	0	2,240	645,120
3,000– 4,999	1,120	35	392	100	2,140	838,880
5,000– 7,499	1,703	35	596	635	1,605	956,580
7,500– 9,999	1,527	43	664	1,190	1,050	697,200
10,000–14,999	1,695	51	861	2,240	—	—
15,000 and Over	934	67	622	3,500	—	—
	8,833	—	3,423			3,137,780

SOURCES:
Columns 1, 2, 3—Based on unpublished Bureau of the Census data.
Column 4—Estimated from table 23.
Column 5—Based on average of costs underlying table 24, column 2.

method of financing higher education, substantial amounts of additional financial aid will be needed to help overcome existing financial barriers and to provide greater equality of educational opportunity.

IX. PROJECTIONS

It did not seem wise to attempt to make a projection of the impact of financial barriers in, say, 1975. Because of the gaps and lags in USOE data pertaining to college costs, financial aid, and the like, and because of rapid changes in the general Federal and State fiscal outlook, there are no convenient benchmarks to use in plotting the future. Some projections are already available and should be suitable for most purposes. Among these are the official USOE projections of enrollments and costs,[61] the "Froomkin" report entitled *Students and Buildings*,[62] as well as other projections included in the "Rivlin" and the Carnegie reports.

X. A CONCLUDING NOTE

Much of this study has involved a discussion of the financial barriers to college attendance, with the data coming largely from the experience of those who are attending college. But what about those potential students who are not attending college? How many of the roughly 50 percent of high school graduates who do not go on to college would go if the costs were somehow reduced, family incomes were somehow supplemented, or if additional financial aid were available?

It has not been possible to provide answers to these questions, not only because few if any people have addressed themselves to such questions, but also because these are inherently difficult questions to answer. What continues to be surprising is that despite a substantial gap between financial need and financial aid resources, we now have close to 5 million full-time college students. Apparently, the gains to be had from college attendance are important enough to cause young people to work, to borrow, and to mobilize funds in a variety of other ways that permit them to enroll. Alternatively, this suggests that the CSS financial need analysis is a very rough and elastic one, such that we should not be wedded too closely to it.

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[61] U.S. Office of Education, *Projections of Educational Statistics*, 1968.
[62] U.S. Office of Education, *Students and Buildings*, 1968.

This leads us to inquire whether we need alternate definitions of financial need—"need" and "severe need" for example—analogous to different degrees of poverty. It may be essential to fill only the "severe need" component of financial need. But until we can better define what this concept means and can attach some numbers to it, we will not be able to explore this issue.

Although a multitude of factors affects college attendance, the financial barriers—the costs of college and the inability to pay these costs—are not insignificant and presumably operate to prevent a number of qualified young people from attending degree-credit institutions of higher education. Financial aid, of course, operates to offset these barriers. But from this examination of the effect of below-cost tuition charges, it is clear that across-the-board reductions in college costs will be expensive and will do little to help the groups most in need of assistance. Increased financial aid for those already in college will do little to help those who never enroll. What seems to be called for instead are more selective policies which, by tying the effective costs of college to financial need and setting commensurately higher charges for those who can pay, will produce added revenue that will help to promote greater equality of educational opportunity.[63]

To augment our knowledge on the impact of financial barriers, high priority must be given to the acquisition of more and better data. First, we need to know more about the amount of and distribution of various types of financial aid to different types of students, identified by family income level, ability to pay, institution attended, and other relevant characteristics. In this way the redistributional effects of financial aid allocations can be identified and analyzed. Second, we need to know much more about how college students finance their schooling, and how the sources of student revenue differ by student background, family income level, and the like. This information would permit a much better evaluation of financial aid policies and practices, and better consideration of alternative methods for financing higher education.

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[63] For an exploration of this approach, see W. Lee Hansen and Burton A. Weisbrod, "A New Approach to Higher Education Finance," in Mel Orwig ed., *Financing Higher Education: Alternatives for the Federal Government*, in press.

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An Examination of State Efforts to Remove Financial Barriers to Postsecondary Education

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I. INTRODUCTION

Every State in the United States is constantly making significant decisions as to how much of its revenue must be directed to the support of higher education. In a time of phenomenal growth of enrollments, with the related facts of open admissions, curriculum changes, campus unrest, and diversification of institutions, the efforts of each State take on even greater importance as plans and programs are shaped to meet future needs.

Never in the Nation's history have so many young people sought the "open door" of college for self-fulfillment and preparation for a better future. At the same time, the cost involved has never been higher.

Both Federal and State governments are involved in creating the public policy concerning higher education. One of the basic challenges is to be able to demonstrate by work and practice that no young American who qualifies for and seeks higher education shall be denied the right to attend an appropriate postsecondary school simply because he lacks the dollars to make the decision a reality. Too often in the past, socioeconomic status has determined who would be able to improve himself through education beyond high school. Financial barriers were real and continue to be so for many students. What is needed is a public commitment of funds so that no student can honestly say that he simply could not afford the cost of any form of higher education.

For many, the American dream for higher education has another aspect. Not only should every effort be made to permit college attendance but, in addition, financial assistance should be provided to permit freedom of college choice. The wide diversity of both public and nonpublic institutions is a significant source of strength to the country. Unless funds are provided for financially needy students to attend nonpublic institutions, many of these colleges will cease to exist and will add to the building and staffing costs of the States and the Federal Government for more or larger public institutions. Financial aid programs directed to students not only assist them but can also have an economic advantage by diverting their enrollment to a nonpublic college, thus avoiding the need for additional general support they would have received at a public institution.

This is a time of abundant opportunities for college attendance, provided the funds are available. Funds for college attendance come from many sources, including the student himself (in the form of earnings and savings), from his parents if they are financially able to provide, from educational loans (deferred obligations), from general support from government or private funds, and from nonrepayable gift assistance provided as scholarship or grant investments in the student.

This study focuses primarily on the 19 States having comprehensive State programs of undergraduate scholarships or gift assistance. Programs of categorical assistance—open only to those students with a unique human circumstance or to fulfill a distinct vocational need—are only briefly reviewed. Such programs, not generally open to all residents of the State to use at either public or nonpublic institutions, were not deemed comprehensive.

The study therefore makes a brief review of general and categorical State support of higher education, and analyzes the comprehensive undergraduate student aid programs as they exist in 1969–70 in the various States, including types and purposes of programs, awards and dollars available, selection procedures, and characteristics of recipients, all with appropriate tables. The study examines the degree to which the demand for financial assistance has been met and estimates future dollar needs for students. It looks at how State and Federal programs of financial gift assistance can be coordinated and examines the various philosophies of programs and the evolving changes in terms of both immediate and future needs.

An appendix has been added to indicate the names, addresses, telephone numbers and administrative personnel of the various comprehensive State programs described in the study.

II. GENERAL AND CATEGORICAL STATE SUPPORT TO PUBLIC COLLEGES AND UNIVERSITIES

It is estimated that the legislators of all States are now appropriating annually an average of about $1,100 per student to the various public colleges and universities as a form of "scholarship" to permit young people to enroll for minimal or low tuition and fee charges. This average figure is for general operating expenses. The States have also added large amounts of funds for buildings and capital improvements as their share in providing educational opportunity. Since total costs of operating State institutions of higher learning exceed State appropriated funds, most colleges must charge tuition and fees to assist in balancing their budgets. The significant issue facing every State is what should be provided from State funds and what should be charged in tuition to the students. The demands upon State treasuries are increasing in all areas, and 1969 saw large tuition increases at tax-assisted colleges and universities simply because legislators were not approving requested increases which would have permitted reasonably stable tuition levels. What happened in 1969 foretells the possibility of increasing pressure to pass the costs of public colleges on to the student and his family. Yet, for many students, even low or modest tuition charges were financial barriers. Only with increased gift assistance programs can the barriers of rising costs for needy students be overcome.

To compound the problem of rising costs further, many States have authorized programs of categorical awards, often without regard to financial need, which either waived or paid for the tuition charges of recipient students. During 1968–69 in Illinois, for example, about 42,000 students (37 percent of all the full-time undergraduates at public 4-year universities) received tuition waivers through categorical awards.

Each State is confronted with important decisions for those attending its public or State institutions. Who should and should not be expected to pay tuition charges for attending the respective colleges? Should financial need be a requirement for any or all financial aid programs? All the comprehensive State programs have financial need as a selection criterion. However, few of the various categorical award programs have financial need as a criterion.

Acting with the autonomy which is rightfully theirs, States have responded over the years with various forms of categorical aid. Such aid has a specific and delineated purpose. Often it was deemed important to provide an incentive for filling certain vocational needs, to provide a form of compensation for previous military service or to provide assistance to the physically handicapped.

Below is a partial listing of the types of persons eligible for categorical aid in the 50 States.

- Veterans
- Children of Deceased Veterans
- Widows of Deceased Veterans
- Children of Disabled Veterans
- Wives of Disabled Veterans
- Children of Veterans
- Nursing Candidates
- Medical Students
- Dental Students
- Future Teachers
- Descendants of Certain Races
- Highest Ranking Senior of Each High School
- Optometrist Students
- Osteopath Students
- Practical Nurses
- Recreational Therapist Students
- Pharmacy Candidates
- Those Pursuing Courses Not Available in State
- Para-Medics
- Lawyer Aspirants
- School Psychologist Candidates
- Library Science Students
- Civil Engineering Students
- Blind Students
- Descendants of Confederate Soldiers or Sailors
- Future Teachers of the Handicapped
- Disabled Students
- Children of Disabled Parents

Undoubtedly, many of the students awarded categorical financial aid attended college who would not have attended otherwise. It is equally true that for many others the award was not necessary to assure college attendance and was not required to pay the college costs the award was designed to meet. In a time of increasing college costs and pressures on the "public purse," it behooves every State to reexamine carefully the purposes and criteria for selection of all its special or categorical awards.

III. COMPREHENSIVE UNDERGRADUATE STATE PROGRAMS OF FINANCIAL AID AVAILABLE TO STATE RESIDENTS ATTENDING PUBLIC AND NONPUBLIC INSTITUTIONS

At present, the States of California, Connecticut, Illinois, Indiana, Iowa, Kansas, Maine, Maryland, Massachusetts, Michigan, Minnesota, New Jersey, New York, Oregon, Pennsylvania, Rhode Island, Vermont, West Virginia, and Wisconsin have general programs of undergraduate assistance applicable to both public and nonpublic institutions of higher education.*

No two of the programs are identical. However, they do have some common characteristics. They are supported and authorized by an act of the legislature, open only to residents of the respective State, and each assesses the need of the applicant.

Originally, in most States, comprehensive programs followed the tradition of college-administered scholarships by using some measure of talent such as test and/or high school record to identify the pool of talented youth and assist the needy among the talented. Public and personal recognition of talent as well as the conferring of monetary scholarships has been and continues to be a dual purpose of many of the competitive comprehensive programs. To implement fully the dual purpose, many States confer an honorary award to those not demonstrating financial need at the college of their choice.

To encourage diversity of choice, most of the comprehensive State programs have defined their maximum awards so as not to exceed tuition and fees. This definition has permitted many States to invest in students attending nonpublic colleges, and thereby indirectly contribute to their support and general welfare. In this manner, broad State programs have sought to promote the continuation and the role of independent and private institutions.

As the analysis of each State's program is made, it should be noted that comprehensive programs are in a condition of dynamic change. New purposes are evolving and new selection variables are being introduced. A common thread in all these new developments is the provision of funds to permit the needy student to attend the college of his choice without designating a specific vocational future. The diversity of State comprehensive programs gives them vitality and strength to serve the "grass roots" needs of their constituents. Continual evolution of the programs can be expected.

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*The author regrets that he was unable to include the program of the State of Ohio, which was passed soon after the completion of this study.

State nonrepayable assistance is playing an ever more significant role in the economics of higher education. States are investing in their financially needy youth as a special form of welfare program. This aid is based on the philosophy that the human resources of any State must be developed not only for the benefit of the individual, but indeed, for the general welfare of the State and Nation.

State programs not only permit college-going to those who might not be financially able to attend, but also significantly affect college choice. Freedom of choice and the preservation of diversity in higher education have motivated the large and comprehensive State programs.

IV. STATE-BY-STATE REVIEW OF COMPREHENSIVE AID PROGRAMS

The following is a listing by States of the various comprehensive assistance programs, both competitive and noncompetitive, for 1969–70. . A detailed analysis of each program is made later in the study.

California: State Scholarship Program (competitive); College Opportunity Grant Program (noncompetitive)
Connecticut: State Scholarship Program (competitive)
Illinois: State Scholarship Program (competitive); Grant Program (noncompetitive)
Indiana: State Scholarship Program (competitive)
Iowa: State Scholarship Program (competitive); Tuition Grant Program for Private Colleges (noncompetitive)
Kansas: State Scholarship Program (competitive)
Maine: State Scholarship Program (competitive)
Maryland: State Scholarship Program (competitive)
Massachusetts: State Scholarship Program (competitive)
Michigan: State Scholarship Program (competitive); Tuition Grant Program (noncompetitive)
Minnesota: State Scholarship Program (competitive); Grant-in-Aid Program (noncompetitive)
New Jersey: State Scholarship Program (competitive); Incentive Scholarships (noncompetitive); Tuition Aid Grant Program (noncompetitive); County (2-year) College Grant Program (noncompetitive); Educational Opportunity Fund for Disadvantaged (noncompetitive)
New York: Regents Scholarship Program (competitive); Scholar Incentive Assistance Program (noncompetitive)
Oregon: State Scholarship Program (competitive); Nonpublic College Grant Program (noncompetitive)
Pennsylvania: State Scholarship Program (competitive); Education Incentive Program (noncompetitive)
Rhode Island: State Scholarship Program (competitive)
Vermont: State Scholarship Program (competitive)
West Virginia: State Scholarship Program (competitive)
Wisconsin: State Scholarship Program (competitive); Tuition Grant Program (noncompetitive)

As noted, all of the 19 States have a comprehensive competitive program. Ten of the States have added to their original program of competitive assistance to better meet the particular needs of their young citizens. In addition, a number of specialized State programs are noncompetitive. Iowa, Michigan, New Jersey, and Wisconsin have programs of tuition grants for financially needy students attending nonpublic colleges and universities. Illinois and Minnesota have grant programs to assist financially needy students to attend public or nonpublic institutions, with maximum awards equivalent in value to the competitive awards. New York and New Jersey have incentive programs to either serve as supplements to the competitive awards or to expand education opportunity to all who are in financial need. California, New Jersey, and Pennsylvania offer a special noncompetitive program for the economically disadvantaged. New Jersey also has special programs for graduates of 2-year colleges. Oregon has a special program for all residents without regard to financial need to attend 4-year nonpublic colleges in the State.

The set of tables that follows shows the characteristics of the various competitive and specialized programs.

TABLE 1.—*Comprehensive State Competitive Programs for Residents to Attend Public or Nonpublic Institutions, 1969–70*

State	Year Began	Maximum Award	Total Dollars Appropriated For Awards	Number of Monetary Awards	Average Award
California	1956	$2,000	$11,288,475	13,680	$825
Connecticut	1964	1,000	877,500	1,440	609
Illinois	1958	1,200	12,000,000	17,100	702
Indiana	1966	800	5,080,000	6,550	470
Iowa	1966	800	262,500	400*	656*
Kansas	1963	500	150,000	409	367
Maine	1967	400	61,000	150	407
Maryland	1825*	1,500	2,900,000	7,250	400
Massachusetts	1958	1,025	2,000,000	3,000	667
Michigan	1964	800	7,300,000	16,780	435
Minnesota	1968	800	575,000	960	600
New Jersey	1959	500	6,900,000	17,470	395
New York	1913	1,000	28,800,000	68,000	424
Oregon	1935	500	167,000	477	350
Pennsylvania	1965	800	51,400,000	76,150	675
Rhode Island	1961	1,000	1,500,000	2,000	750
Vermont**	1965	1,000	1,099,255	2,100	523
West Virginia	1968	600	175,000	625	280
Wisconsin	1966	800	750,000	1,925	390
Totals or average			131,285,730	236,466	555

* Best estimate.

** Vermont's program is basically noncompetitive. Only 100 ($100) freshman awards are on a strictly competitive basis.

TABLE 2.—*Comprehensive State Competitive Programs for Residents to Attend Public or Nonpublic Institutions*

State	Percentage-monetary awards				Percentage-dollars		Mean parental income	
	at public	at nonpublic	in-State	out-of-State	public	nonpublic	applicants	winners
California	50	50	100	0	15	85	NA	9,800
Connecticut	35	65	34	66	25*	75*	NA	NA
Illinois	42	58	100	0	19	81	11,644	10,130
Indiana	48	52	100	0	48	52	NA	NA
Iowa	60*	40*	100	0	50*	50*	NA	NA
Kansas	77	23	100	0	69	31	6,500	6,000
Maine	50*	50*	98	2	50*	50*	NA	NA
Maryland	60	40	100	0	60	40	NA	NA
Massachusetts	35	65	90	10	25	75	NA	NA
Michigan	72	28	100	0	65	35	NA	8,900
Minnesota	47	53	100	0	33	67	NA	9,200
New Jersey	65	35	70	30	65	35	10,599	8,219
New York	50	50	100	0	38	62	NA	NA
Oregon	70	30	100	0	67	33	NA	NA
Pennsylvania	51	49	85	15	48	52	9,500	8,750
Rhode Island	55	45	60	40	45	55	NA	7,500
Vermont	60	40	85	15	60	40	NA	NA
West Virginia	90	10	100	0	78	22	7,503	5,360
Wisconsin	82	18	100	0	83	17	NA	NA
Weighted percentage or average	53 or 125,262 Awards	47 or 111,204 Awards	92 or 217,434 Awards	8 or 19,032 Awards	42 or $55.4M	58 or $75.9M	NA	8,928

*Best estimate.
NA: Not Available.

TABLE 3.—*Comprehensive State Competitive Programs for Residents to Attend Public or Nonpublic Institutions*

State	Estimated Percentage of High School Seniors For Which Available Funds Permitted Consideration
California	2.0
Connecticut	1.4
Illinois	9.0
Indiana	—
Iowa	1.0
Kansas	.6
Maine	None*
Maryland	20.0
Massachusetts	2.5
Michigan	3.0
Minnesota	1.0
New Jersey	11.5
New York	18,843**
Oregon	.5
Pennsylvania	97.0
Rhode Island	5.0
Vermont	14.5
West Virginia	2.0
Wisconsin	10.0

* Program only available to 1967 winners to complete their education.
** Fixed number by law for new freshmen.

TABLE 4.—*Comprehensive State Competitive Programs for Residents to Attend Public or Nonpublic Institutions*

(Estimated impacts of program on college-going and college choice)

State	Percentages-without awards	
	Not Able to Attend Any College	Not Able to Attend College of Their Choice
California	5	50
Connecticut	NA	NA
Illinois	18	33
Indiana	NA	NA
Iowa	30	10
Kansas	50	50
Maine	NA	NA
Maryland	65	30
Massachusetts	NA	NA
Michigan	30	35
Minnesota	14	27
New Jersey	NA	NA
New York	NA	NA
Oregon	NA	NA
Pennsylvania	NA	NA
Rhode Island	NA	NA
Vermont	30	NA
West Virginia	40	5
Wisconsin	10	5

NA: Not Available.

TABLE 5.—*Comprehensive State Competitive Programs for Residents to Attend Public or Nonpublic Institutions*

State	Selection criteria		Class years				Type awards conferred		
	Test	Rank or High School Record	Frosh	Soph	Jr.	Sr.	Monetary	Honorary	Certificates
California	S.A.T.	Required minimum	+	+	+	+	+		
Connecticut	S.A.T.	Rank	+	+	+	+	+		+
Illinois	A.C.T.	Rank	+	+	+	+	+	+	+
Indiana	S.A.T.	Rank	+	+	+	+	+	+	
Iowa	A.C.T.	Rank and record	+	+			+	+	
Kansas	A.C.T. or S.A.T.	Rank	+	+			+	+	
Maine	S.A.T.	Rank			+	+	+		
Maryland	S.A.T.	Rank	+	+	+	+	+		
Massachusetts	S.A.T.	Rank	+	+	+	+	+	+	
Michigan	A.C.T.**	Rank	+	+	+	+	+	+	
Minnesota	Own S.A.T.	Rank	+	+	+	+	+	+	
New Jersey	S.A.T.*	Rank*	+	+	+	+	+		
New York	Regents	None	+	+	+	+	+		+
Oregon	S.A.T.	Record	+	+	+	+	+	+	
Pennsylvania	S.A.T.	None	+	+	+	+	+		
Rhode Island	S.A.T.	Rank	+	+	+	+	+	+	
Vermont	None	None	+	+	+	+	+	+	
West Virginia	A.C.T. or S.A.T.	Rank	+	+	+	+	+		+
Wisconsin	High School selects Based on Enrollment		+				+		

*Financial need also used in selection process

**Special form of A.C.T.

TABLE 6.—*Comprehensive State Competitive Programs for Residents to Attend Public or Nonpublic Institutions*

(Changes in funding for awards in comparing 1968-69 with 1969-70 award years)

State	1968–69	1969–70	Change	Percentage of Change
California	$ 7,700,000	$11,288,475	+$ 3,588,475	+ 46.6
Connecticut	693,000	877,500	+ 184,500	+ 26.6
Illinois	8,140,000	12,000,000	+ 3,860,000	+ 47.4
Indiana	2,494,858	3,080,000	+ 585,142	+ 23.5
Iowa	125,000	262,500	+ 137,500	+110.0
Kansas	150,000	150,000	—	0.0
Maine	61,000	61,000	—	0.0
Maryland	2,257,300	2,900,000	+ 642,700	+ 28.5
Massachusetts	500,000	2,000,000	+ 1,500,000	+300.0
Michigan	6,250,000	7,300,000	+ 1,050,000	+ 16.8
Minnesota	250,000	575,000	+ 325,000	+130.0
New Jersey	5,620,000	6,900,000	+ 1,280,600	+ 22.8
New York	26,000,000	28,800,000	+ 2,800,000*	+ 10.8
Oregon	167,000	167,000	—	0.0
Pennsylvania	46,500,000	51,400,000*	+ 4,900,000	+ 10.5
Rhode Island	1,300,000	1,500,000	+ 200,000	+ 15.4
Vermont	893,982	1,099,255	+ 205,273	+ 23.0
West Virginia	25,000	175,000	+ 150,000	+600.0
Wisconsin	750,000	750,000	—	0.0
Totals	109,877,140	131,285,730	+ 21,408,590	+ 19.5

*Best estimate

TABLE 7.—*Comprehensive State Competitive Programs for Residents to Attend Public or Nonpublic Institutions*

(Unique restrictions on awards)

State	Limited To Tuition & Fees	Can Be Used Out-of-State	Can Be Used At For-Profit Institutions	Can Be Used At 2-Yr. Colleges	Can Be Used At Nonprofit Voc./Tech. Schools	Can Be Used At Hospital Schools Of Nursing
California	YES	NO	NO	NO	NO	NO
Connecticut	NO	YES	NO	YES	NO	NO
Illinois	YES	NO	NO	YES	NO	NO
Indiana	YES	NO	NO	YES	NO	YES
Iowa	YES	NO	NO	YES	NO	YES
Kansas	YES	NO	NO	YES	NO	NO
Maine	YES	YES	NO	YES	NO	NO
Maryland	NO	NO	YES	YES	NO	NO
Massachusetts	NO	YES	NO	YES	NO	YES
Michigan	YES	NO	YES	YES	YES	NO
Minnesota	NO *	NO	NO	YES	YES	YES
New Jersey	YES	YES	NO	YES	NO	YES
New York	YES	NO	NO	YES	NO	YES
Oregon	NO	NO	NO	NO	NO	NO
Pennsylvania	YES	YES	YES	YES	YES	YES
Rhode Island	NO	YES	NO	YES	NO	NO
Vermont	NO	YES	NO	YES	YES	YES
West Virginia	YES	NO	NO	YES	NO	NO
Wisconsin	NO	NO	NO	YES	YES	YES

*Plus $100 Book Allowance

The next set of tables shows specialized noncompetitive State programs for residents to attend public or nonpublic (or solely nonpublic) institutions during 1969–70. The final table (table 12) provides a summary of all comprehensive State programs.

TABLE 8.—*Specialized Noncompetitive State Programs of Undergraduate Financial Gift Assistance, 1969-70*

State and Program(s)	Year Began	Maximum Award	Total Dollars Appropriated For Awards	# Monetary Awards	Average Award
California					
College Opportunity Grant	1969	Tuition and Fees plus $1100	$1,000,000	1,000	$1,000
Illinois					
Grant Program	1967	$1,200	14,000,000	21,375	655
Iowa					
Tuition Grant for Private Colleges	1969	1,000	1,500,000	1,875*	800*
Michigan					
Tuition Grant	1966	800	5,200,000	7,250	717
Minnesota					
Grant-in-Aid	1969	800	200,000	333	600
New Jersey					
Incentive	1966	500	1,300,000	2,650	490
Tuition Aid Grant	1969	1,000	1,000,000	3,225	310
County College Grant	1969	1,000	250,000	313	800
Educational Opportunity Fund	1968	800*	2,400,000	3,000	800
New York					
Scholar Incentive Assistance	1961	500	30,000,000	195,000	154
Oregon					
Nonpublic College Grant Program	1969	100	648,400	6,484	100
Pennsylvania					
Education Incentive Program	1969	800	500,000	1,250	400
Wisconsin					
Tuition Grant	1965	500	2,200,000	7,585	290
Totals			60,198,400	251,340	240

* Best estimate

Table 9.—*Specialized Noncompetitive State Programs of Undergraduate Financial Gift Assistance*

State and Programs	Percentage-Monetary Awards				Percentage-Dollars		Mean Parental Income	
	At Public	At Nonpublic	In-State	Out-of-State	Public	Nonpublic	Applicants	Winners
California								
College Opportunity Grant	96	4	100	0	95	5	$5,500*	$4,750*
Illinois								
Grant Program	53	47	100	0	24	76	9,002	8,473
Iowa								
Tuition Grant for Private Colleges	0	100	100	0	0	100	NA	NA
Michigan								
Tuition Grant	0	100	100	0	0	100	10,000*	9,000
Minnesota								
Grant-in-Aid	65	35	100	0	55	45	7,500*	4,500*
New Jersey								
Incentive	2	98	100	0	1	99	NA	NA
Tuition Aid Grant	0	100	100	0	0	100	NA	NA
County College Grant	65	35	35	65	65	35	NA	NA
Educational Opportunity Fund**	NA	NA	NA	NA	NA	NA	NA	NA
New York								
Scholar Incentive Assistance	43	57	100	0	33	67	NA	NA
Oregon								
Nonpublic College Grant Program	0	100	100	0	0	100	NA	NA
Pennsylvania								
Education Incentive Program	NA	NA	100	0	NA	NA	NA	NA
Wisconsin								
Tuition Grant	0	100	100	0	0	100	NA	NA

NA: Not Available.
*Best estimate
**This program was administered by individual colleges of New Jersey

Table 10.—*Specialized Noncompetitive State Programs of Undergraduate Financial Gift Assistance*

State and Programs	Estimated Percentage of High School Seniors For Which Available Funds Permitted Consideration
California	
College Opportunity Grant	0.4
Illinois	
Grant Program	9.0
Iowa	
Tuition Grant for Private Colleges	NA
Michigan	
Tuition Grant	2.0
Minnesota	
Grant-in-Aid	.5
New Jersey	
Incentive	11.5
Tuition Aid Grant	2.0
County College Grant	NA
Educational Opportunity Fund	NA
New York	
Scholar Incentive Program	100.0
Oregon	
Nonpublic College Grant Program	NA
Pennsylvania	
Education Incentive Program	1.0
Wisconsin	
Tuition Grant	NA

NA: Not Available.

Table 11.—*Specialized Noncompetitive State Programs of Undergraduate Financial Gift Assistance*

State and Programs	Percentage Who Went Without Awards	
	Not Able to Attend Any College	Not Able to Attend College of Their Choice
California		
College Opportunity Grant	50*	7.5*
Illinois		
Grant Program	24	11
Iowa		
Tuition Grant for Private Colleges	NA	NA
Michigan		
Tuition Grant	7.5*	50 *
Minnesota		
Grant-in-Aid	NA	NA
New Jersey		
Incentive	NA	NA
County College Grant	NA	NA
Tuition Aid Grant	NA	NA
Educational Opportunity Fund	NA	NA
New York		
Scholar Incentive Program	NA	NA
Oregon		
Nonpublic Grant	NA	NA
Pennsylvania		
Education Incentive Program	NA	NA
Wisconsin		
Tuition Grant	2	10

*Best estimate
NA: Not Available.

TABLE 12.—*Summary of All Comprehensive Undergraduate State Programs (Competitive and Noncompetitive) for Residents of the State to Attend Either Public or Nonpublic Colleges or Universities, 1969-70*

State	Total Dollars Appropriated	Percent of Total	Number of Awards	Percent of Total	Average Award
California	$12,288,475	6.4	14,680	3.0	$837
Connecticut	877,500	.5	1,440	.3	609
Illinois	26,000,000	13.6	38,475	7.9	676
Indiana	3,080,000	1.6	6,550	1.3	470
Iowa	1,762,500	.9	2,275	.5	775
Kansas	150,000	.08	409	.08	367
Maine	61,000	.03	150	.03	407
Maryland	2,900,000	1.5	7,250	1.5	400
Massachusetts	2,000,000	1.0	3,000	.6	667
Michigan	12,500,000	6.5	24,030	4.9	526
Minnesota	775,000	.4	1,293	.3	603
New Jersey	11,850,000	6.2	26,658	5.5	445
New York	58,800,000	30.7	263,000	53.9	224
Oregon	815,400	.4	6,961	1.4	117
Pennsylvania	51,900,000	27.1	77,400	15.9	671
Rhode Island	1,500,000	.8	2,000	.4	750
Vermont	1,099,255	.6	2,100	.4	523
West Virginia	175,000	.09	625	.1	280
Wisconsin	2,950,000	1.5	9,510	1.9	350
Totals	191,484,130	100.0	487,806	100.0	393

V. UNDERGRADUATE DEMAND FOR FINANCIAL AID AND ESTIMATED FUTURE NEEDS

It is estimated that 3 million youth graduated from all secondary schools in the United States in 1969. About half of them entered college in 1969–70 as freshmen. These entering freshmen comprised approximately 35 percent of all the full-time undergraduates, or about 4,285,000 students.

The mean family income for all fall 1968 entering freshmen, as indicated in the March 10, 1969 issue of *The Chronicle of Higher Education,* was approximately $9,728. It is estimated that about half of these freshmen needed some form of gift assistance to attend the college of their choice. This would assume parental support as well as reasonable contributions from the student in the form of earnings and modest borrowing.

Therefore, it can be estimated that 2,142,500 students in 1969–70 demonstrated the need for gift assistance to attend the college of their choice. Comprehensive State programs assisted 490,000 of these students, or 23 percent of them. Other programs (Federal, categorical State, private, and the colleges' own programs of awards) probably assisted about 400,000 additional students, or an additional 19 percent. This means that about 1,252,000 students, or 58 percent, who were enrolled were in financial need. By necessity, they probably turned either to second choice colleges, excessive borrowing, excessive hours at work, or they have parents who are making unreasonable sacrifices of income or assets. If these students were to receive an average award of $400 (the approximate average to be received by winners in all comprehensive State programs in 1969–70), the additional gift dollars required would total approximately $500 million.

Many educators estimate that by 1980 we should and could have a minimum of 80 percent of our high school graduates in an appropriate postsecondary institution. This increase of 3 percent per year over the next 10 years would add 90,000 additional students each year to college enrollments. Many of these will come from socioeconomic backgrounds requiring large amounts of financial aid. If 75 percent of these new students required financial assistance of at least $600, it would mean an additional $40.5 million per year to provide educational opportunities for this group.

Therefore, if all existing sources remain relatively constant, it can be estimated that for 1970–71 an additional $540.5 million is needed and desirable. To allow for increases each year for a higher percentage of high school graduates in college and the ever-widening gap between personal incomes and college costs, it would seem necessary to have an additional $50 million available nationally for each year thereafter in the 1970's.

Both a quality output of educated citizens and the extension of opportunity for college attendance to thousands not now planning to attend require a huge investment of our financial resources.

It is of interest to note that although the current efforts of the States, in concert with other efforts, are substantial, only about half of the financial "barriers" have been removed.

VI. COORDINATION OF STATE AND FEDERAL PROGRAMS

Except for veteran's and social security educational benefits, the existing Federal financial aid programs for undergraduates are designed predominately for the truly economically underprivileged. The assurance of college opportunity (and not necessarily freedom of college choice) has been the thrust of most Federal programs of student aid. The Federal Government defines need relative to a specific family income. Many States compare a wide range of incomes with a specific college cost budget to determine financial need.

States with noncompetitive grant programs are finding a substantial number of students holding both State grants and Federal Educational Opportunity Grants (EOG's) to help meet total need. States with only competitive programs of undergraduate financial aid have not been able to identify large numbers of overlap candidates. This is because one of the truisms in the United States is the correlation between academic achievement and financial strength of a family. As a rule, talented students are usually less in need of gift dollars to attend college than the less talented.

To coordinate fully the existing Federal EOG program, with its emphasis on very needy students, and the State efforts along these lines, a dynamic new form of creative federalism is needed.

Although some States are reluctant to invest tax dollars in marginal students, others have taken the bold step to open college doors to all, with State programs of financial aid to keep open the door. Providing Federal matching funds or seed money to the States, in order to raise the much needed dollars, is one possible answer. The States now providing their own "EOG" dollars cannot be ignored in any creative new plan. Past efforts must be recognized and expanded and new efforts must be motivated. The 19 States with comprehensive programs represent 53.6 percent of the U.S. population and possibly 70 percent of the Nation's wealth. The challenge is to involve the States with limited resources, to make them concerned about their young residents, and to reduce the impact of State-of-residence on college opportunity.

Additional funds could, of course, be made available to the respective colleges. In the long run, this way may not best serve the needs of the individual. When a central State agency administers a financial aid program, both flexibility of college choice and a more standard appraisal of financial need are more likely to be maintained. The problem of availability of dollars for a specific college choice is minimized. The development of strong and comprehensive State programs, with some funds provided by the Federal Government, appears to be the best long-range answer.

States can continue to have competitive programs which can contribute greatly to the preservation of diversity of higher education within the State. They can, with Federal assistance, also develop significant funds to enable all needy students to receive financial aid at the postsecondary institution of their choice.

To help reach this ideal, a form of creative federalism in financial aid to the disadvantaged appears wise and necessary. Without such an approach, State-by-State differences as to who can afford to attend and/or complete their education will only become greater.

VII. VARIOUS PHILOSOPHIES OF FINANCIAL ASSISTANCE PROGRAMS

Who should qualify for financial aid? What purposes are to be served in a particular financial aid program? Are all prospective recipients to be treated alike as regards the amount of award and/or eligibility to apply?

Philosophy or objectives of any financial aid program are most important considerations. Invested dollars should be the means to secure agreed-upon goals. The goals are the why of any private, institutional, State, or Federal program of financial aid.

In the past 15 years there have been dramatic changes in the philosophies of financial aid. The development of objective systems of need analysis have contributed greatly to new philosophies. The question as to who could or should enroll in college has also contributed greatly to the rapid changes of purpose in financial aid programs.

Originally, there were scholarships which were rewards for excellence in grade performance or for measured potential. These were truly gifts. Little, if any, regard was given to whether or not the recipient required the dollars to implement his educational choice beyond high school. This made many prospective students objects for the highest bidder, and chaos and nonsense prevailed. Making a college decision on the basis of greater monetary return was finally viewed as most unacceptable. This operating philosophy has almost disappeared from the American scene.

With the arrival of standardized and reasonably equitable objective need analysis systems, new tools were available to determine if high ability students truly possessed financial need. The situation improved since financial need was now relative to the ability of a family to pay for the actual costs of a particular college choice. The philosophy continues in most State competitive programs of assisting only the truly needy among the most able. To preserve the historic association of honor with high scholarship, many not qualifying on the basis of need are still given honorary scholarships (certificates of recognition).

The next major change in operating philosophy was acceptance of the fact that any enrollable needy student should have access to gift dollars to implement his postsecondary educational choice, regardless of past record or measured potential. For years these students had jobs or loans as their only sources of financial aid.

Each of the States has had to examine what role its programs of financial aid should serve. The rapid and recent expansion of specialized noncompetitive programs at the State level is a new response for new purposes. The basic questions to be faced are:

1. Should there be investments in students without financial need?

2. Should there be investments in students to attend some college who would not attend any college without assistance?

3. Should there be investments in students who need assistance to attend the college of their choice when they could have afforded a less expensive choice?

4. Are the economic interests of the State served best by encouraging students to attend nonpublic institutions instead of public institutions?

5. Should measured academic potential or past record of the applicant give him a priority in financial aid consideration?

6. Should degree of financial need give an applicant a priority in financial aid consideration?

7. Does true freedom of choice mean that out-of-State as well as in-State college choices qualify for financial assistance?

8. Does a postsecondary institution (specialized and/or

profit-seeking) offering training for a job future unavailable elsewhere, qualify to have its needy students receive gift assistance?

9. Do part-time students have financial need? If so, what different treatment is needed in relationship to full-time students?

10. Are too many programs confusing? For good communication of opportunity, would one central program serve all the needy citizens of a State who wish to attend their appropriate postsecondary choice?

Means should follow ends. Until the ends to be served are carefully defined and understood, it is impossible to establish programs which are both relevant and effective. Sound philosophy must precede implementation.

VIII. SUMMARY

There is a great generation gap in understanding who should go to college and who should qualify for financial aid. The "American dream" of climbing as high on a ladder as your "God given" abilities and personal efforts can take you infers that higher education provides the important steps of the mythical ladder. Today, we are attempting to open the door and provide the dollars for all to climb. The dollars needed are more and more dependent upon the treasuries of the Federal and State governments. Many demands are made for the same dollars. Free higher education, fully paid by government for all students, does not seem fiscally possible in the foreseeable future. If it were possible, the ramifications for nonpublic institutions might be undesirable and unwelcome.

The most realistic approach appears to be one of expecting parents to continue to provide what dollars they can; asking the student to invest to a realistic degree in his own future; enlisting private support from business, industry, and philanthropic individuals; and expecting the Federal and State governments to supply the remaining dollar needs. The easy answer is to continue to pass rising costs to the student and his family. The harder but necessary answer is to expect the government to provide what is realistically needed.

To seek more education after high school is becoming more than a privilege; it is a fundamental right. To go to the college of your choice is no longer limited in many States to those whose families can afford it. The unique characteristic of the United States higher education system is to provide for all citizens the freedom of college-going and college-choice, without the restraint of dollars available.

Difficult decisions remain. Wealth and a high degree of industrialization are the characteristics of those States providing the dollars and programs to implement these freedoms noted above. The economic resources of one's family and State of residence are big determinants as to whether or not one might have access to needed dollars. Creative federalism is challenged to provide incentives or programs to better equalize college attendance opportunities in any of the 50 States in which its citizens reside. Funds from Washington and all the States must be combined to fully extend educational opportunity to all. The development of our human resources should be our highest priority of national concern.

Few topics of conversation among parents of college-bound youth are more frequent or full of anxiety than the ever increasing cost of attending postsecondary institutions. A chief concern of all legislators is the amount of tax dollars which can and should go to support higher education. The prospective or enrolled college students continue to seek college as the "door of opportunity" and are confronted with important choices of where and how to afford their choice. The overworked high school counselor and college financial aid officer attempt to do their best to make opportunities become real by providing information and counsel. Important decisions affecting millions of lives are being made in the changing and dynamic world of higher education. Admissions policies, curriculum change, financial aid programs and philosophies, and administrative structures are all in a state of change.

Where are the funds for college costs? Where should the funding responsibility be placed? Which students deserve an investment of Federal and/or State taxpayer dollars to help pay the costs? What role should the student play in placing himself in debt for future higher earnings?

Until about 1958, almost all gift scholarship dollars for undergraduate college students were for the academically excellent or the veteran as a form of compensation for service to his country. Little regard was given to whether the recipient needed the dollar to attend college. In the past 12 years, significant changes have taken place in financial aid practices. Financial need as a criterion has been almost universally accepted. Huge amounts of Federal and State dollars have become available to replace largely the historic role of a college having to budget a specific amount of its funds as the major source for scholarship, loan or student employment financial aid. High academic potential or outstanding previous performance is no longer the sole criterion for those who seek to qualify for gift assistance.

The existence of financial need to attend the postsecondary institution of the student's choice is the developing single criterion of emerging State programs. The economically disadvantaged, not merely the talented, are the focus of new programs. Talent search, early identification, and decision-making based upon assured financial assistance are all required. To assist poor people to rise on the economic ladder requires financial gift aid for colleges to be available to the truly disadvantaged. Dollars invested in average or "on paper" poor risk students is the new and frequent response to enhancing educational opportunity. The related problem of foregone earnings for low-income families when a major young wage earner of the family is in college must also be faced and dealt with satisfactorily.

Existing programs can be built upon, and the Federal Government should encourage, not substitute, the non-Federal sources. Certain incentives, or "seed money," must be provided to motivate the 31 States without comprehensive programs. Tragically, it is true that low income students are more frequently found in States with low fiscal capacity.

The problem is tremendous. Only in the United States is the problem given real concern. More dollars for higher education from tax funds assisting both the institutions and the individuals is surely one form of welfare which adds to the vitality and strength of a nation. The benefits are both immediate and long range.

APPENDIX

Directory of Comprehensive State Programs of Undergraduate Financial Aid

CALIFORNIA

California State Scholarship and Loan Commission
714 "P" Street
Sacramento, Calif. 95814
916-445-0880
Arthur Marmaduke, Executive Director
Mrs. Dortha Morrison, Assistant Executive Director

CONNECTICUT

State Scholarship Commission
340 Capitol Avenue
P.O. Box 1320
Hartford, Conn. 06115
203-566-3910
Dr. William H. James, Acting Secretary

ILLINOIS

Illinois State Scholarship Commission
730 Waukegan Road
P. O. Box 607
Deerfield, Ill. 60015
312-945-1500
Dr. Joseph D. Boyd, Executive Director
Dr. Leroy Noel, Associate Executive Director
Ralph Godzicki, Administrative Director, Scholarship and Grant Division

INDIANA

State Scholarship Commission
514 State Office Building
100 N. Senate Avenue
Indianapolis, Ind. 46204
317-633-5445
Claude I. Hughes, Executive Secretary
Michael B. Cracraft, Assistant Executive Secretary

IOWA

Higher Education Facilities Commission
1300 Des Moines Building
Des Moines, Iowa 50309
515-243-0569
W. L. Roy Wellborne, Executive Director

KANSAS

Kansas State Department of Education
120 E. 10th
Topeka, Kans. 66612
913-296-3944
Kenneth J. Ekdahl, Consultant

MAINE

Maine State Department of Education
Education Building
Augusta, Maine 04330
207-289-2181
Mr. Beverly Trenholm, Director of Bureau of Guidance, Special and Adult Education

MARYLAND

State Scholarship Board
2100 Guilford Avenue
Baltimore, Md. 21218
301-383-3010 Ext. 8322
William Anthony, Executive Director

MASSACHUSETTS

Board of Higher Education
182 Tremont
Boston, Mass. 02111
617-727-5367
Graham Taylor, Director of Academic Planning
Conrad L. Kohler, Executive Secretary

MICHIGAN

Michigan Department of Education
Division of Student Financial Aids
P. O. Box 420
Lansing, Mich. 48910
517-373-3394
Ronald J. Jursa, Director, Division of Student Financial Aids
Patrick Cummings, Coordinator, Loans
Neil Shriner, Coordinator, Scholarships
Aaron Hall, Coordinator, Tuition Grants

MINNESOTA

Minnesota Higher Education Coordinating Commission
Suite 400, Capitol Square
550 Cedar Street
St. Paul, Minn. 55101
612-221-3321
Richard C. Hawk, Executive Director
Robert E. Leestamper, Assistant Executive Director for Programs and Planning
George B. Risty, Assistant Executive Director for Budget Administration and Student Aids

NEW JERSEY

New Jersey State Scholarship Program
State Department of Higher Education
P. O. Box 1293
Trenton, N. J. 08625
609-292-4646
Dr. Elizabeth L. Ehart, Director
Hubert A. Thomas, Assistant Director
Thomas V. Hartigan, Assistant Director
Mrs. Nina R. Zachary, Supervisor

NEW YORK

Regents Examination and Scholarship Center
State Education Department
Albany, N. Y. 12224
518-474-5709
Sherman N. Tinkelman, Assistant Commissioner for Examinations and Scholarships
Meldon A. Kelsey, Student Financial Aid Supervisor

OREGON

Oregon State Scholarship Commission
1445 Willamette Street
Eugene, Oreg. 97410
503-342-1411 Ext. 2431
Jeffrey Lee, Executive Director
James Meinert, Grants Programs Director

PENNSYLVANIA

Pennsylvania Higher Education Assistance Agency
Towne House
Harrisburg, Pa. 17102
717-787-1937
Kenneth R. Reeher, Executive Director
Earl R. Fielder, Deputy Director
Thomas R. Fabian, Director, Scholarship Division
Jay W. Evans, Director, Loan Guaranty Division
Harry R. Casoni, Director, Data Processing Division
Nelson P. Spengler, Director, Fiscal Affairs Division

J. William Kerr, Director, Staff Services Division
Samuel J. Johnson, Director, Field Services Division

RHODE ISLAND

State Department of Education
Roger Williams Building
25 Hayes Street
Providence, R. I. 02908
401-521-7100 Ext. 675
Dr. William P. Robinson Jr., Commissioner of Education
Dr. Arthur Pontarelli, Deputy Commissioner
Kenneth P. Mellor, Chief, Education, Personnel and Scholarship

VERMONT

Vermont Student Assistance Corporation
109 S. Winooski Avenue
Burlington, Vt. 05401
802-862-9406
Dr. Max Barrows, Executive Director
Newton Baker, Talent Search Grant Director

WEST VIRGINIA

Commission on Higher Education
1715 McClung Street
Charleston, W. Va. 25305
304-348-3257
J. Douglas Machesney, Executive Director
Jerry L. Beasley, Director, Educational Awareness Program
Robert Long, Administrative Assistant
Kenneth Chou, Administrative Assistant

WISCONSIN

Higher Educational Aids Board
115 West Wilson Street
Madison, Wis. 53703
608-266-2897
James A. Jung, Executive Secretary
Richard H. Johnston, Administrator, Student Support Activities
Lawrence E. Hamilton, Administrator, Institutional Support Activities
Richard Aukema, Administrator, Educational Opportunities Activities

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The Importance of Relevance in Expanding Postsecondary Education

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I express sincere appreciation for the helpful suggestions and materials provided by a number of colleagues—particularly Lowell Burkett, Joseph Katz, Dorothy Knoell, Winston Manning, Lewis Mayhew, and Dale Tillery. Special gratitude is due Ben Cameron, Jr., whose critical reading of the manuscript resulted in a much improved report.

I. INTRODUCTION

In recent years there has been a widening national consensus regarding the desirability of universal opportunity for postsecondary education. This aspiration has been accompanied by a mounting insistence that education be more relevant to individual and social need—so much so that the word relevance regretably has become hackneyed and somewhat unfashionable. This paper directs attention to the critical necessity that expanded educational opportunity be relevant to those new students whom it is intended to serve.

From 1947 to 1967 the proportion of college-age young people actually enrolled in higher education institutions approximately doubled.[1] In the same interval, the number of degrees conferred by colleges each year also increased twofold.[2] Despite this progress—and partly because of it—social and economic opportunity has become increasingly associated with access to higher education. Changes in the labor market illustrate one reason why. The gross number of service-oriented jobs increased by 56 percent—28.8 million *vs.* 44.8 million since 1950; jobs involved in production of goods decreased 3 percent—30.7 million *vs.* 29.7 million—during the same period.[3] That is, most new jobs have been in the service area, and this area includes the jobs which either require postsecondary education or are assumed to be required by personnel managers who hire accordingly.

It is these facts plus the recognition of deep-seated social injustice which have greatly intensified interest in expanding and equalizing opportunity for education beyond high school. Public officials examine the dimensions of the need;[4] private citizens call for new levels of effort;[5] and elected representatives seek feasible legislative proposals for "making available a postsecondary education to all young Americans who qualify and seek it."[6]

Consideration of this national goal naturally raises numerous difficult questions concerning facilities, faculty, and funds. A prior set of questions concerns the very nature of postsecondary education and the societal functions it serves. Any substantial expansion must certainly be relevant to individual and social needs. Regardless of the immediate pressures and the worthwhile intentions, ultimate success in educational or social terms must depend upon that relevancy. It is the purpose of this paper to examine relevancy with particular emphasis upon those populations which expanded opportunity would presumably serve.

This is an unfortunately appropriate time to question the relevance of postsecondary education. Responsible consideration of expanding educational opportunity must take into account some obvious facts. As the Carnegie Commission (1969) has recently put it, many colleges and universities are in "deep trouble." Unable to adjust adequately to the quantitative impact of drastically increased levels of responsibility in recent years, many institutions developed serious problems. "Campuses became centers of protest and rebellion. Administrators found their burdens virtually unbearable, and the public became confused and in many places, severely critical of higher education's performance."

These institutional problems both reflect and feed a wide assortment of student dissatisfactions. They range from militant exasperation to indolent boredom—perhaps for varied reasons but typically explained under the general rubric of irrelevance. Some blame the professors who give too little attention to the legitimate needs of students. Others blame the system which attempts to serve too many students disinterested in the traditional goals of higher education. In any

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[1] U.S. Office of Education, *Progress of Public Education in the United States of America 1967–1968.* Washington, D.C.: USOE, 1968.

[2] U.S. Office of Education, *Digest of Educational Statistics 1968.* Washington, D.C.: USOE, 1968.

[3] U.S. Bureau of the Census, *Statistical Abstract of the United States: 1968.* Washington, D.C.: USBC, 1968.

[4] U.S. Department of Health, Education, and Welfare, *Toward a Long Range Plan for Federal Financial Support for Higher Education.* Washington, D.C.: USDHEW, 1969.

[5] Carnegie Commission on Higher Education, *Quality and Equality: New Levels of Federal Responsibility for Higher Education.* New York: McGraw-Hill, 1968.

[6] Higher Education Amendments of 1968, Public Law 90–575. Washington, D.C.: Government Printing Office, 1968.

TABLE 1.—*Types of Relevance*

Basic Functions of Postsecondary Education	To Serve the Needs of: Individuals	To Serve the Needs of: Society
Definition of Roles and Responsibilities	I PERSONAL RELEVANCE — Equal Opportunity for Individual Development	II SOCIAL RELEVANCE — Pressure-release Mechanism for Support of the Democratic Process
Development of Modes of Action	III EDUCATIONAL RELEVANCE — Effective Instruction for Individual Development	IV ECONOMIC RELEVANCE — Manpower Requirements and Occupational Training

event, expansion of postsecondary education in the name of equal opportunity, economic requirement, social expectancy, or ubiquitous progress cannot ignore one fact: More of the same is, at best, an expensive and temporary expedient. It is no solace to add that improving the relevance of education is probably not much easier than improving society itself.

Each year scores of books contribute to a discussion of the relevance of postsecondary education. A series of excellent papers edited by McGrath illustrates the wide range of topics which must be considered in any serious discussion of universal higher education.[7] The very limited space of this paper allows only modest objectives. The main purpose is to suggest various aspects of relevance which need to be taken into account in considering specific proposals for expanding educational opportunity beyond high school.

II. TYPES OF RELEVANCE

There are many interpretations of the objectives of postsecondary education but no generally accepted translation into implications regarding the relevance of expanded opportunity. Relevance is concerned mainly with qualitative as opposed to quantitative considerations.

In 1916, A.N. Whitehead wrote, "The essence of education is that it is religious."[8] These social institutions—education and religion—resemble one another in that their basic functions are both concerned with (1) definition of roles and responsibilities and (2) development of modes of action for carrying out those roles and responsibilities. As Nasatir [9] interprets Talcott Parsons,[10] it is in the classroom that the commitments as well as the capacities essential for adequate performance of adult roles are developed.

These two basic functions—defining roles and responsibilities and developing modes of action—provide a means for defining general classes of relevance. Table 1 illustrates first that personal relevance and social relevance refer to the extent to which the role defining function serves individual and societal needs. Defining roles means individual discovery of talents, interests, and opportunities; it also means recognizing duties to society. In broader application this function refers to a mechanism whereby society readjusts roles and marshals resources, both ethical and intellectual.

This function defines personal relevance for the individual and social relevance for society. Personal relevance means ready availability of appropriate postsecondary education to students, of whatever background, residence, or socioeconomic condition in order to foster individual development of useful social roles. Social relevance refers to the capacity of postsecondary education to reorganize roles and responsibilities. This form of relevance has the characteristics of a pressure-release mechanism when acute social problems require the rapid adjustment essential to a viable democracy.

The second basic function—development of modes of action—refers more specifically to the content of education. Modes of action include methods of approaching problems, and ways of fulfilling roles as well as particular bodies of knowledge and the techniques of individual occupations. As indicated in table 1, effective development of modes of action for individuals results in educational relevance. At the societal level effective modes of action mean economic relevance.

The immediate requirements of educational relevance center on instructional methods and content which make education accessible and meaningful to individual students with different needs. As a longer range consideration, there is the necessity to make the learning process appropriate to the functions it will ultimately serve. A fundamental aspect of educational relevance is the individual's intellectual and career development.

From a social standpoint, development of modes of action can be construed as economic relevance. This follows readily from the assumption that society's need for skills and technology is basically an economic need. Economic relevance is particularly associated with meeting current manpower requirements.

These four forms of relevance—personal, social, educational, and economic—are discussed in turn in the following paragraphs. Matters pertaining directly to expanding opportunity necessarily receive primary attention here at the expense of numerous other obviously important aspects of the relevance of existing education for present students. The frequent lack of objective data concerning the relevance of postsecondary education should be noted at the outset. As a consequence, present conditions can at best be described only tentatively and barriers to educational opportunity which are cited must be regarded as potential and little understood in their real effect.

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[7] E. J. McGrath, *Universal Higher Education*. New York: McGraw-Hill, 1966.

[8] A. N. Whitehead, *The Aims of Education and Other Essays*. New York: Macmillan, 1929.

[9] D. Nasatir, "Resistance to Innovation in American Education," in Werner Z. Hirsch and colleagues, *Inventing Education for the Future*. San Francisco: Chandler, 1967.

[10] T. Parsons, "The School Class as a Social System: Some of its Functions in American Society." *Harvard Educational Review*, 1959, Vol. 29, p. 297.

III. PERSONAL RELEVANCE

A generation ago only one person in four attended college; within the next decade the ratio is likely to reach one in two and this doesn't count vast enrollments in other forms of postsecondary education. Thus, an increasing majority of American youth at all levels of achievement and social condition will look to education beyond age 18 to provide occupational training, to help define the individual's role in society, and to develop the intellectual resources necessary for a fulfilling life.

An enhanced responsibility for serving youth falls upon postsecondary education during a period of critical social unrest. It is worth adding that the governance of education beyond high school is often diffuse and frequently has little formal connection with the high schools on the one hand or the world of work on the other. These problems make it all the more difficult to develop innovative, coordinated programs to help young people find useful and satisfying roles.

In this context personal relevance takes on particular meaning. It is the equal opportunity for all students to develop their individually appropriate roles in society. If there is to be equal opportunity of expression, personally relevant to all young people, it must be supported by readily available resources which meet the needs of individuals. Personal relevance implies not only an absence of barriers to individual achievement and fulfillment, but also programs which ensure minimum inequities due to social conditions perhaps only partly related to individual aspiration and typically beyond individual intervention.

Significant expansion of postsecondary education will involve predominantly a different type of student from those who attend college at the present. This is partly an assumption easily derived from statistical descriptions of students currently enrolled,[11] but partly a reflection of the social intent in expanding education beyond high school. In either event we are talking about relevant educational opportunities for students who are not now, in any legitimate sense, in the mainstream of higher education.

The following paragraphs include discussion of four potential barriers to equal opportunity for individual development To lower these barriers to opportunity is to improve personal relevance in the most immediate way.

Financial Restraints

The most important single factor impeding educational opportunity beyond high school is commonly presumed to be financial need though there is reason to doubt that this is completely accurate. Ten years ago Cowhig and Nam[12] reported that some 15 to 20 percent of high school graduates said they were not going to college because they "lacked money." The same study indicated, however, a very modest relationship between college attendance and family income. That conclusion is supported by recent data which indicate that some 35 percent of college student families have income below the national median.[13]

Nonetheless, one boy in five and one girl in four in the 11th grade feel that inability to earn enough money will have a "great deal of influence" on their possible decision to skip college.[14] In another recent study, one-half of urban students not planning to attend college cited financial problems as the reason.[15] As Crawford's study has indicated, what students actually do is much dependent upon what aid is finally available.[16] And there is evidence that the substantial increase in public and private student aid funds in recent years had an effect upon students. Jaffe and Adams cite comparisons between 1959 and 1965 in the percentage of students at different family income levels who plan to attend college.[17] During this period affluent students raised their college expectations by 6 percent whereas the rise for poor students was 25 percent. Despite increases in aid, two out of three students still report at least some concern regarding the financing of their education.[18].

It seems possible to reconcile these somewhat conflicting lines of evidence by recognizing that students with marginal motivation are likely to regard any financial need as serious. Education which costs more than a poor student has right now is likely to be an irrelevant alternative among the possibilities he considers. Expansion of educational opportunity necessarily involves expanded financial support. These realities are recognized in the recommendations of recent national panels though exact details of such programs are subject to much debate.[19] For the purpose of expanding educational opportunity, work-study seems attractive to minority youth and politically inoffensive.[20] It seems likely, however, that federally guaranteed loans may be the most realistic form of aid for many middle income families. Neither of these forms of aid can reduce the importance of low cost community institutions.

Academic Standards

Academic selectivity has been for many years a major screen in determining "who goes where to college."[21] Recently such selectivity has intensified at many institutions due to large increases in the college population, but has also become less critical in many areas because of the rapid development of open-door junior colleges. Discussion of admissions standards has revolved about questions concerning merit-oriented admissions policy, appropriateness of current selection measures, and entrance credentials.

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[11] U.S. Bureau of the Census, "Characteristics of Students and Their Colleges—October 1966." *Current Population Reports*, Series P–20, No. 183, 1969.

[12] U.S. Bureau of the Census, "Educational Status, College Plans, and Occupational Status of Farm and Non-farm Youths: October 1959." Washington, D.C.: USBC, Series Census-ERS (P–27), No. 30, 1961.

[13] U.S. Bureau of the Census, "Characteristics of Students and Their Colleges—October 1966." *op. cit.*

[14] D. Tillery, D. Donovan, and B. Sherman, *SCOPE Grade Eleven Profile—1968 Questionnaire Selected Items.* New York: College Entrance Examination Board, 1969.

[15] D. M. Knoell, *A Study of the College-Going Behavior of Urban High School Graduates, with Particular Attention to Black Youth Not Now in College.* Washington, D.C.: American Association of Junior Colleges, 1969, mimeo.

[16] N. C. Crawford, Jr., "Effects of Offers of Financial Assistance on the College-going Decisions of Talented Students With Limited Financial Means." *NMSC Research Reports*, 1967, Vol. 3, No. 5.

[17] A. J. Jaffe and W. Adams, *American Higher Education in Transition.* New York: Bureau of Applied Social Research, 1969.

[18] J. A. Creager, *et al.*, "National Norms for Entering Freshmen—Fall 1968." *ACE Research Reports*, 1968, Vol. 3, No. 1.

[19] See U.S. DHEW, *Toward a Long-Range Plan. . . ., op. cit.* and also Carnegie Commission on Higher Education, *Quality and Equality. . . ., op. cit.*

[20] D. M. Knoell, *Toward Educational Opportunity for All.* Albany: State University of New York, 1966.

[21] A. W. Astin, *Who Goes Where to College?* Chicago: Science Research Associates, 1965.

Questioning of traditional "merit" selection has ranged from calm yet troubled reason,[22] to more extreme positions suggesting that minority students should be admitted to higher institutions by committees of minority students and that they not be held to any academic standards for at least a year.[23] Various writers have charged that aptitude tests are an overused instrument of meritocratic selection in the case of privileged,[24] as well as poverty, students.[25]

The best available evidence is that traditional academic selection procedures are not biased in any usual sense of the word.[26] Of course, they do reflect faithfully the social and educational system which itself incorporates historic and substantial bias of many sorts. The fundamental question is what general forms of selectivity will govern which students enroll in which programs and institutions.

It is reasonable to assume that society must use its resources selectively, matching talents with jobs for the common and the individual good. Following Jencks, it is unlikely that it will be possible in the near future to improve greatly upon current indices of academic talent as traditionally defined.[27] The problem seems to rest more in inflexible application of accepted values. In particular, talent is viewed too narrowly in the educative process.

The majority of students feel that their best abilities lie outside of traditional academic areas.[28] Expanding service occupations and new careers seem certain to require talents other than middle class achievements.[29] The major college admissions testing agencies have initiated programs designed to yield a more complete picture of students' strengths,[30] though much work remains to translate such information into educational programs which are relevant to diverse talents.

Admission credentials may well be an increasing barrier to relevant educational opportunity. The expansion of education in the armed services, proprietary institutions, adult education, private business, etc., has created large numbers of students whose educational opportunity is hampered by lack of credentials.[31] The College Level Examination Program does provide one formal route to higher education for such students.[32]

There has been much less research than informal speculation concerning the effect of secondary school credentials on opportunity for continued education. Data from Project TALENT indicate that college entrants are far more likely to have taken a college preparatory program than are noncollege students. This finding is reinforced and extended by more recent census data.[33] For example, among those above average in tested ability, 95 percent of college preparatory students planned to attend college while only 50 percent of similarly able students in other programs planned on college. That is, choice of high school program either exerts a direct influence on postsecondary plans or reflects an early disinterest in college not altered by the school.

The same data show that it is chiefly the 2-year college which enables the nonpreparatory student to get to college. On the other hand, there is evidence which indicates that even at the 2-year college the high school curriculum predicts entrance and nonentrance more accurately than does tested ability. Jaffe and Adams (1969) conclude that "of the two academic variables, it is the curriculum rather than ability that appears to be the more obstinate obstacle." Motivation, however, may be the real underlying variable.

Data collected a decade ago give a discouraging impression of the school counselor's impact on students.[34] More recent information justifies considerably more optimism and possibly reflects substantial professional growth due in part to the effects of the National Defense Education Act.[35] The actual effects of the counselor's advice is a cloudy issue, however, which may parallel the matter of school curriculum. Jaffe and Adams conclude that guidance personnel often advise (one in five) above-average students not to enter college and that such advice is often followed (two in five).

D. M. Knoell also concludes from interview data that students with below average records are frequently told by teachers and counselors from junior high on that they are not "college material," and it may be true that traditional colleges are frequently irrelevant to such students.[36] Naturally, the secondary school must make distinction in achievement and maintain standards, but it is most important that those distinctions not be irreversible and that they recognize a wide variety of human talent and corresponding opportunity at the postsecondary level.

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[22] B. Thresher, *College Admissions and the Public Interest.* New York: College Entrance Examination Board, 1966.

[23] B. W. McKendall, Jr., ed., *Statewide Seminar on Race and Poverty in Higher Education.* Palo Alto: College Entrance Examination Board, 1968.

[24] M. A. Wallach and C. W. Wing, Jr., *The Talented Student.* San Francisco: Holt, Rinehart and Winston, 1969.

[25] J. A. Fishman, *et al.*, "Guidelines for Testing Minority Group Children." *Journal of Social Issues*, 1964, Vol. 20, pp. 129–145.

[26] See A. W. Astin, "Racial Considerations in College Admissions." American Council on Education, 1969, mimeo. See also J. C. Stanley and A. C. Porter, "Correlation of Scholastic Aptitude Test Score with College Grades for Negroes versus Whites." *Journal of Educational Measurement*, 1967, Vol. 4, pp. 199–218.

[27] C. Jencks, "Social Stratification and Higher Education." *Harvard Educational Review*, 1968, Vol. 38, pp. 277–316.

[28] D. Tillery, D. Donovan, and B. Sherman, *SCOPE Four-State Profile Grade Twelve—1966.* New York: College Entrance Examination Board, 1966.

[29] F. Riessman and H. I. Popper, *Up From Poverty.* New York: Harper & Row, 1968.

[30] See American College Testing Program, *College Student Profiles Norms for the ACT Assessment.* Iowa City: ACTP, 1966. See also Comparative Guidance and Placement Program, *An Experimental Program for Junior Colleges.* New York: College Entrance Examination Board, 1968.

[31] G. Venn, *Man, Education and Work.* Washington, D.C.: American Council on Education, 1964.

[32] J. N. Arbolino, *College-Level Examination Program: Description and Uses, 1968.* New York: College Entrance Examination Board, 1968.

[33] A. J. Jaffe and W. Adams, *op. cit.*

[34] J. C. Flanagan, *et al.*, *The American High School Student.* Pittsburgh: Project TALENT, University of Pittsburgh, 1964.

[35] D. Tillery, *et al.*, *SCOPE Four-State Profile Grade Twelve—1966. op. cit.*

[36] D. M. Knoell, *Toward Educational Opportunity for All. op. cit.*

There is every reason to expect that there will continue to be considerable tension in the determination of academic standards at all critical levels of education. The major needs would seem to be maintenance of open-door policies in community colleges; greater willingness to teach the student, not just the course; improved bases for guiding students into appropriate courses of study in high school and thereafter; flexible use of varied indices of talent and achievement; and emergency programs to rectify critical imbalances brought about by past inflexibility. There is an obvious need to understand better the impact of the school on the student's self-image; there is the parallel need to develop flexible means of keeping open many education-vocational options to students as they mature.

Accessibility of Facilities

Early in 1968, there was no inexpensive, nonselective institution in the Washington, D.C. area offering a wide range of college-level work. It is understandable, therefore, that Federal City College was deluged with applications when it opened its doors that fall.[37] The example is well-known, but it illustrates a simple point. To a large number of potential students, an educational opportunity outside the immediate community is not a relevant alternative.

Since Koos' early demonstration, there have been additional studies showing that community colleges increase the rate of college attendance in the local area.[38] Medsker and Trent have reported data indicating that junior colleges are more effective than alternate facilities in attracting students.[39] Bashaw's study of Florida junior colleges suggests that college access rates doubled in those communities where new colleges were opened as compared with other localities without colleges.[40]

Considering the very large role that proximity can evidently play, it is indeed surprising that so little research has been directed to the relation of demography to educational opportunity. An initial question is the extent to which various populations in the country (urban-rural; black-white; East-West) live within commuting distance of a nonselective, inexpensive college. Data from a recent study indicate that less than half of the total population lives near such a "free access" college and that sizable inequities exist from one area to another.[41]

Additional important questions include: What changes in such opportunity have taken place during the last increase in college facilities but concomitant widespread rise in tuition and selectivity over the past decade; and how well do these "free access" colleges actually serve their communities by providing relevant programs and attracting students who can best profit? It is reasonable to assume that true universal higher education, if it is to be achieved, must exist unbounded by accidents of geography. It seems therefore important to understand how the location of institutions affects local circumstances. But it is immediately apparent that many population centers are deficient or completely lacking in accessible education beyond high school. This is a specific inequity which can be remedied but will require substantial resources.

Social Differences in Access

Even assuming that all financial, academic, and physical barriers to postsecondary opportunity can be dealt with effectively, it is almost certain that inequities will remain for various groups which have some means of social identification. These include ethnic groups, class strata, geographic regions, students from different types of high schools, and even sex. Such differences are extremely important because they carry with them the assumption of overarching social effects which hamper individual freedom and ultimately find political expression.

One way in which these social effects are presumed to operate is to inhibit motivation. We have already recounted evidence of inappropriately low aspiration in relation to educational opportunity. Jaffe and Adams' data further indicate that substantial numbers of students (minority students in particular) do not desire college but plan to go anyway. In another context, Knoell concludes that many students are either disinterested or find sure marginal employment a greater attraction than long range educational possibilities.[42] This lack of motivation for further education may be variously attributed to school, home, and class effects.

On the other side, there is the straightforward question of what sort of education different students want and whether there are appropriate programs available. The question requires gathering information concerning background, aspiration, and needs from representative groups of prospective students and casting it against plans for programs, facilities, faculty, supporting services, etc. This is a critical need which lies at the heart of State and Federal planning.

Due to the virtual lack of administrative connection between secondary and subsequent education in most instances, it is almost impossible to coordinate needs and opportunities or to know what happens to any group of 18-year-olds unless they are specifically surveyed and followed up. The important point is that equal opportunity demands more than the mere assumption that opportunity is equal in the absence of contrary evidence.

The best example of our present inability to answer even routine questions regarding equal opportunity among social groups is the case of the black American. Even though there has been intense interest, it is not possible to say definitely whether the college access rate of blacks is catching up with the majority rate or not. Census data indicate that access rates increased for whites more rapidly than for nonwhites from the early fifties to the early sixties.[43] Data for the past several critical years are either incomplete or impossible to interpret in comparable terms.[44]

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[37] Federal City College, "Federal City College—an Urban Commitment." *Focus on the Federal City College*, 1968, Vol. 2, No. 2.

[38] L. V. Koos, "How to Democratize the Junior-College Level." *The School Review*, 1944, pp. 271–284.

[39] L. L. Medsker and J. W. Trent, *The Influence of Different Types of Public Higher Institutions on College Attendance from Varying Socioeconomic and Ability Levels.* Berkeley: Center for Research and Development in Higher Education, University of California, 1965.

[40] W. L. Bashaw, "The Effect of Community Junior Colleges on the Proportion of the Local Population Who Seek Higher Education." *The Journal of Educational Research*, 1965, Vol. 58, pp. 327–329.

[41] W. W. Willingham, *Free Access Higher Education.* New York: College Entrance Examination Board, 1970.

[42] D. M. Knoell, *Toward Educational Opportunity for All. op. cit.*

Identification of social inequities in educational opportunity carries two implications. First, it represents a breakdown in the system designed to insure individual opportunity. Second, it requires special restitution to bring opportunity into better balance. With adequate social bookkeeping, it would not have been necessary to wait so long for Federal programs like Talent Search or for an evaluation of their effectiveness.

IV. SOCIAL RELEVANCE

In performing the basic function of defining social roles and responsibilities, postsecondary education serves the broad interests of society by providing pressure-release mechanisms in times of stress. The pressure-release mechanism works in one way to marshal those resources and apply them where they are needed. It also works as a buffer and means for large scale reorganizing of social roles.

Galbraith has placed considerable stress upon the marshaling function, calling higher education institutions the most important resource in the modern industrial system.[45] Kerr also emphasizes this capacity, tracing its origins to the Morrill Act of 1862 and subsequently to the massive Federal funding of scientific research over the past 25 years.[46] The best recent examples of this capacity in action are the response to national threat during World War II and national prestige in the Sputnik era. On the other hand, Lazarsfeld and Thielens documented a signal failure of higher education as a moral resource during the McCarthy period.[47]

There are other times of stress which call not so much for application of resources as for adjustment of roles across society. As Gardner has described the educational system, it is the indispensable instrument of the revolution in social organization.[48] A striking period of social adjustment occurred with the return of veterans in the late 1940's. The country is now faced with a far more serious task of social reorganization involving a substantial proportion of the minority and majority population. Expanded opportunity for more relevant postsecondary education is commonly regarded as a major possibility for mitigating current social injustice.

In order to maintain social relevance in these terms, education—higher education in particular—needs all of the normal physical and financial resources plus three somewhat antagonistic qualities. It needs autonomy which allows it to pursue truth, flexibility which permits rapid adaptation to new needs, and the social commitment required of any vital and effective institution. Present conditions and available evidence suggest that it is the latter two, flexibility and social commitment, which now need strengthening.

Perhaps the best line of current evidence concerning social relevance lies in the quality of student protests. "What has been gingerly referred to as student unrest is turning, on many campuses, into open warfare involving not only students but faculty, trustees, and State legislatures."[49] Peterson's survey of student protest in 1967–68 is particularly revealing.[50] The six issues most often involved at 50 large public universities were:

Issue	Percent of Universities Involved
Campus recruiting by other agencies	68%
U.S. policies regarding Vietnam	64
Campus recruiting by armed services	56
Racial discrimination	48
Civil rights	46
The Draft	46

Of the 27 types of protest included in the survey, ranging from curriculum inflexibility (18 percent) to academic freedom (8 percent) to living regulations (30 percent), the notable fact is that every one of the six most frequent types concerned moral issues involving social commitments of students.

One interpretation of the student rebellion is the acting out of needs felt deeply by students but not sufficiently channeled by the existing educational framework. The blase indifference and inadequate social commitment which anger and turn off students are by no means the whole story, but they provide substantial challenge for improving the social relevance of postsecondary education.

There is, however, another need dramatically documented by events so recent they exist primarily in the collective conscience and the public press. This is the need for sufficient flexibility to create useful and appropriate programs for new students with radically new problems and aspirations. The Black Studies movement has taken on dramatic proportions and given needed attention to the tensions which exist between established values and new definitions of social relevance.[51]

These forms of relevance—social commitment and flexibility to serve new students—have a direct bearing upon the breadth of educational opportunity in fairly obvious ways. Inadequate commitment to problems of society or the immediate community reinforces an impression of detachment hardly attractive to educationally marginal youth. And the educational flexibility to generate programs which will attract new students is a closely related requirement.

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[43] A. J. Jaffe and W. Adams, *op. cit.* See also U.S. Bureau of the Census, *Education of the American Population.* Washington, D.C.: USBC, 1967.

[44] For example, Knoell, 1969; Bayer and Boruch, 1969; Egerton, 1969; *Chronicle of Higher Education*, 1969; Coleman *et al.*, 1966.

[45] J. Galbraith, *The New Industrial State.* New York: Houghton Mifflin, 1967.

[46] C. Kerr, *The Uses of the University.* Cambridge: Harvard Univ. Press, 1963.

[47] P. F. Lazarsfeld and W. Thielens, Jr., *The Academic Mind.* Glencoe, Illinois: The Free Press, 1958.

[48] J. W. Gardner, *No Easy Victories.* New York: Harper & Row, 1968.

[49] K. P. Cross, "The Campus Confrontations." *The Research Reporter*, 1969, Vol. 4, No. 1, pp. 1–4.

[50] R. E. Peterson, *The Scope of Organized Student Protest in 1967–1968.* Princeton: Educational Testing Service, 1968.

[51] H. W. Lane, moderator, "The Black Agenda for Higher Education." *College Board Review*, 1969, No. 71, pp. 5–27.

Social Commitment

When thoughtful and responsible students complain of an impersonal, competitive, and materialistic system and seek to have their institutions confront these moral issues, they speak not only of education but of society as well. These issues involve man's relation to man, and they pertain to every community. It is noteworthy that among the most important objectives of college freshmen are to "develop a philosophy of life," "help others in difficulty," and "keep up with political affairs."[52] And the main factors influencing students' choice of college are the teaching reputation and a friendly environment.[53] These values seem clear enough. They indicate a strong sense of community and social involvement which students hope to find in the college experience. It is the loss of this sense of community which Moynihan has called one of our root problems.[54]

This form of social commitment means basically that people care about one another and feel personally responsible for their acts and their environment. In the move to bigness, some colleges have used the "cluster college" approach in an attempt to maintain a sense of community. This model has evidently worked well,[55] but its application and effects seem limited to certain essentially academic situations. The social commitment implied by "sense of community" should typically mean a good deal more than internal physical arrangements. It should mean that the institution is channeling the commitments of its faculty and students in socially useful ways and directly supporting its immediate environment in the process. As Weaver states, community education has become a cultural imperative.[56]

This is by no means a new concern. The 2-year colleges have long emphasized community service as a means of improving social relevance.[57] Recently proposed models have detailed the advantages of fluid no-wall campuses in urban settings.[58] Such institutions can adapt to urban needs and constitute rich laboratories to study and ameliorate social problems. The Urban Educational Center is a new and successful example of putting community needs first.[59] The master plan adopted by the Board of Higher Education of the City University of New York integrates all postsecondary needs into one system.[60] Finally, the urban campus reaches its logical conclusion in the multicampus, open-door, regional university proposed by Peterson.[61]

These are useful arrangements, but they do not deal effectively with the main problem—inadequate means of expressing social commitment on thousands of existing campuses. To be quite concrete, a specific need is to devise ways to promote useful interaction between the substantial student and faculty resources of institutions and the problem-ridden communities which surround them. The two have always tended to be isolated and there are insufficient formal means for bringing them together. As a result, "free universities" or twilight organizations such as "Vocations for Social Change" provide an avenue for a few students willing to work outside normal institutional channels.[62] They very likely help those involved but their informal character precludes either large social impact or moral benefit to orthodox institutions. The need remains to develop ways to nourish social commitment on the campus so that it yields immediate, practical, and personal results for students, faculty and community. The Behavioral and Social Sciences Survey Committee of the National Academy of Sciences has just recently recommended the establishment of Graduate Schools of Applied Behavioral Science to work toward the solution of social problems.[63] Such schools could definitely support social action, though additional arrangements are required which might have more immediate impact on students and the educational process.

One possibility would be a Federal seed program of numerous but relatively small institutional grants to establish interdisciplinary Centers for Community Service. The intent would be to discover and work on social problems in the immediate environment, perhaps largely through student practicum work. Such a center could serve many purposes: as an interdisciplinary catalyst, as a funding umbrella, as a window to the community, as a focus for institutional changes, as an instructional medium, as a community resource, and as a moral force in the institution.

Service to New Students

Expanding educational opportunity has brought with it the reality that new breeds of students require new breeds of education. This seems true because of two facts acting jointly. First, culturally different students frequently do not respond to traditional education cast in a dominant culture mold.[64] Second, the operation of minority culture identification and pride has given new importance to cultural emphasis and in some cases separatism. It is well recognized that useful alternatives to traditional education are, as yet, largely unknown or untested and that there is divisive opinion regarding appropriate educational expression of minority pride. Both serve to complicate considerably any discussion of how education should exercise flexibility in serving new students.

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[52] J. A. Creager *et al., "National Norms for Entering Freshmen—Fall 1968." op. cit.*

[53] D. Tillery *et al., SCOPE Four-State Profile Grade Twelve—1966. op. cit.*

[54] D. P. Moynihan, "Cities Have No Limit." National Educational Television Special, July 18, 1969.

[55] See Stickler, 1964; Axelrod *et al.*, 1969; and Fischer, 1969.

[56] D. C. Weaver, "Community Education—a Cultural Imperative." *Reports Digest*, 1969, No. 41, pp. 10–13.

[57] L. L. Medsker, *The Junior College: Progress and Prospect.* New York: McGraw-Hill, 1960.

[58] See Community College Planning Center, *Community Colleges in Urban Settings.* Stanford University: CCPC, 1964, and also Educational Facilities Laboratories, *A College in the City: An Alternative.* New York: EFL, 1969.

[59] A. C. Cohen, "The College for Human Services." *Teachers College Record*, 1968, Vol. 69, pp. 665–682.

[60] Board of Higher Education of the City of New York, *Master Plan of the Board of Higher Education for the City University of New York.* New York: BHECNY, 1968.

[61] R. E. Peterson, *The Regional University and the Comprehensive College: A Somewhat Immodest Proposal.* Berkeley: Educational Testing Service, 1969, mimeo.

[62] Vocations for Social Change, *Vocations for Social Change May–June 1969.* Canyon, California, 1969.

[63] Behavioral and Social Sciences Survey Committee, *Summary and Major Recommendations of the Behavioral and Social Sciences Survey Committee of the National Academy of Sciences.* Englewood Cliffs, New Jersey: Prentice-Hall, 1969.

[64] T. Carter, *Mexican-Americans in School: A History of Educational Neglect.* New York: College Entrance Examination Board, 1970, and also E. W. Gordon and D. A. Wilkerson, *Compensatory Education for the Disadvantaged.* New York: College Entrance Examination Board, 1966.

Very recent innovations are of three general types. The first emphasizes cultural identification and the mutual assistance which comes from programs designed for minority students. Black studies represents the major thrust given additional impetus by a series of recent foundation grants.[65] This general approach is also expressed in colleges designed to serve minority groups. Examples include Navaho Community College [66] and the previously mentioned Urban Educational Center.

The New Careers movement is a provocative second approach which places primary emphasis upon the immediate educational-vocational needs of the poor, regardless of minority identification.[67] It involves close ties between postsecondary institutions and private enterprise with the watchword, "job now—degree later." The College of Human Services is a new institution which serves the urban poor with heavy emphasis upon New Careers.[68]

The third approach represents bootstrap innovations in relatively conventional settings such as Upward Bound, Higher Horizons, National Scholarship Service, and Fund for Negro Students, etc. The conference on Higher Education for the Disadvantaged spotlighted the Experiment in Higher Education (1968) at Southern Illinois University plus other promising programs. These seem to represent a new level of sophistication in the currently derided compensatory tradition.

These approaches to serving new students span a broad spectrum, though they still affect relatively small numbers of students. It is commonly recognized in mid-1969 that there is an important race between public loss of patience with student unrest and the development of useful programs to mitigate the cause of that unrest. Each of the three general approaches mentioned above has merit for different reasons. The New Careers program is particularly attractive because it deals in one way or another with most of the barriers to educational opportunity outlined in this paper.

V. EDUCATIONAL RELEVANCE

In the present context educational relevance refers to "developing modes of action" which help and permit young people to fulfill appropriate roles and responsibilities. Modes of action include occupational preparation as well as the social skills and confidence to pursue careers with success and satisfaction. They include personal values in addition to an understanding of general forms of inquiry which protect individuals from intellectual obsolescence in rapidly changing world. As eloquently stated by Axelrod and others:

> For most people, getting an education appears to be a matter of acquiring units of information; how much one acquires is in direct proportion to the number of semesters spent in college. There is rarely any suggestion that a college education might improve the individual, that it might broaden his horizons, liberate him from dogma, from prejudice, or from internal conflict that limits his humanity. Seldom does any member of the general public visualize a college education helping a student to find himself, and rarely does he think of education as consisting of a total experience embracing not only courses and examinations, but also opportunities for students to try new styles of life, to learn from each other, or to form their beliefs through involvement in controversial issues.[69]

This process of student development is closely related to what sociologists are likely to call socialization.[70] Educational relevance has an obvious bearing upon the expansion of educational opportunity since opportunity is not automatically achieved upon enrollment at an institution. If the opportunity is to mean anything, it must involve relevant experience which lasts through to a useful outcome. New matriculants who end up as resentful dropouts or apathetic accumulators of dubious credits amount only to shady statistics, not social progress.

Recent literature suggests two critical areas of concern in improving educational relevance. (1) Instructional quality—"Nearly every discussion of student unrest points out the relation of that problem to the poor teaching that is found on college and university campuses." [71] (2) Student development—"I state the case for individual development as the primary aim of education . . . for it is only through individual development that a person can maintain his humanity and become truly useful in our technological, post-capitalistic society." [72] Relevant occupational training is a third area of concern which might well be discussed here, but is deferred until the next section since it is more closely related to manpower considerations.

Instructional Quality

In the large literature of excellent though often unheeded articles on teaching at the postsecondary level,[73] two key problems frequently emerge. The first is faculty reward for activities other than teaching; the second is outmoded attitudes and practices.[74] There are few good ideas on how to change the reward system but there is wide consensus that education can be made more relevant by broadening the conception of instruction. Various writers have suggested the following specific aspects of instruction which need to be viewed in a broader context:

1. Areas of Instruction—most instruction takes place in the traditional academic-conceptual area. Other areas include es-

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[65] American Council on Education, "Ford Foundation Gives Afro-American Studies Grants of $1 Million." *Higher Education and National Affairs,* 1969, Vol. 18, No. 22, pp. 6–7.

[66] L. Mathews, "The Navahos Build a College." *San Francisco Sunday Examiner & Chronicle,* June 22, 1969.

[67] F. Riessman and H. I. Popper, *op. cit.*

[68] A. C. Cohen, "The College for Human Services." *op. cit.*

[69] J. Axelrod, *et al., Search for Relevance.* San Francisco: Jossey-Bass, 1969.

[70] See S. Sieber, P. Nash, and W. Schenkel, *A Taxonomy of Higher Education.* New York: Bureau of Applied Social Research, 1968, and also O. G. Brim, Jr., and S. Wheeler, *Socialization After Childhood: Two Essays.* New York: John Wiley & Sons, 1966.

[71] Danforth Foundation, *Annual Report,* 1965.

[72] N. Sanford, *Where Colleges Fail.* San Francisco: Jossey-Bass, 1968.

[73] See, for example, Milton and Shoben, 1968; Lee, 1967; Hallam, 1966.

[74] J. Axelrod, *et al., op. cit.*

thetic-artistic, people-oriented, inanimate objects, motoric expression, and the art of sociability. "But the essential thing is to move beyond a 'single variable' conception of teaching."[75]

2. Student Experiences—students need a variety of experiences such as: independent study, a sustained relationship with an adult role model, understanding of a different subculture, a sustained off-campus experience, a number of intense but brief ad hoc activities, opportunity to gain understanding of his own emotions and those of others, experience with use of new media, and an aesthetically creative experience regardless of performance level.[76]

3. Methods of Instruction—it is possible to broaden the methods of instruction through a wide variety of technological innovations developed at a limited number of colleges.[77] There are additional promising new methods [78] and well-proven techniques from the armed services [79] which should be tried particularly in occupational curriculums. In general the armed services should have the opportunity to prove or disprove their cloakroom reputation of knowing more about instruction and training than do educational institutions.

4. Learning Situations—instruction should take place in situations other than the class and laboratory whenever appropriate. "For the college to facilitate the fullest growth of the human personality, it ought to reflect the world beyond the campuses in every feasible way." [80]

5. Kinds of Faculty—"A new kind of faculty must appear, composed of men and women whose primary concern is the facilitation of the learning experience of students. . . ." [81] One way to accomplish this is to enlist skilled and dedicated people from nonacademic professions.[82]

6. Methods of Evaluation—the Muscatine (1966) report indicates general student resentment of the grading system while Hoyt's analysis brings the real validity of grades into question.[83] Both suggest the need for additional means of evaluation of student performance and development. Davis' work on faculty evaluation is one significant step in this direction.[84]

The central problem of improving instruction is to devise ways to bring an altered reward system to bear on loosening up these six aspects of the teaching-learning process.

Student Development

Axelrod *et al.* sum up the recent research on the impact of college on students [85] saying that the present evidence is that the college experience does make a difference but "the influences producing the change are factors other than the educational program as conceived and implemented by the faculty." [86] Recent data from Project SCOPE at the University of California at Berkeley confirm this view.[87] To a marked extent (typically four or five to one) students cited other students and outside speakers as the people who had most influenced their views on important social issues. As Katz *et al.* observe, most educators have been concerned with quantity instead of quality, and with professional interests instead of the student whose development should be the central concern of education.[88]

It is only in recent years that the matter of student development has become such a major issue as to provoke a respected group of educators to recommend that "the whole freshman year should be viewed as an orientation to learning rather than the first year of academic instruction." [89] Leland's review [90] documents the correspondingly recent emergence of career development as a field of research and theory, particularly at Harvard [91] and Columbia.[92]

One problem is to help the student understand educational and career alternatives as they relate to his interests and competencies. The work of Tiedeman and his colleagues (1965) on an Information System for Vocational Decisions is an important development. Katz *et al.* propose to take the problem to the heart of the curriculum and build individual educational programs upon interests and proficiencies rather than credits and departmental lines.[93]

In the final analysis the question is whether the educational experience will contribute to the development of a mature and competent adult, able to contribute to society and defend its basic values. The education of women, the often neglected majority, provides a dramatic example of how far we have to go. Katz has written a compelling account of the inadequacies of higher education for women as they relate to the realities of adult life.[94] But as is often true in matters of educational relevancy, the problem starts and ends in society.

As with quality of instruction, the problem of bringing proper attention to student development seems tightly bound in the tensions which exist between the educational interests and the discipline interests of the faculty. As long as the Federal Government and private foundations continue to reward research and scholarly activity in such a manner that they compete with faculty interest in student development, it is hard to imagine how present circumstances will change substantially.

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[75] J. Katz, *et al., No Time For Youth.* San Francisco: Jossey-Bass, 1968.

[76] L. B. Mayhew, *Contemporary College Students and the Curriculum.* Atlanta, Georgia: Southern Regional Education Board, 1969. (Research Monograph 14)

[77] B. L. Johnson, *Islands of Innovation Expanding: Changes in the Community College.* Beverly Hills, California: Glencoe Press, 1969.

[78] L. J. Briggs, *et al., Instructional Media: A Procedure for the Design of Multi-Media Instruction, A Critical Review of Research, and Suggestions for Future Research.* Pittsburgh: American Institutes for Research, 1967.

[79] E. L. Shriver, *et al.,* A procedural guide for technical implementation of the FORECAST methods of task and skill analysis. Training Methods Division, George Washington University, Human Resources Research Office, 1961.

[80] Hazen Foundation, *The Student in Higher Education.* Report of the Committee on the Student in Higher Education. New Haven: The Hazen Foundation, 1968.

[81] *Ibid.*

[82] J. Katz, *et al., op. cit.*

[83] O. Milton and E. J. Shoben, Jr., eds., *Learning and the Professors.* Athens, Ohio: Ohio University Press, 1968.

[84] J. A. Davis, "What College Teachers Value in Students." *College Board Review,* 1965, No. 56, pp. 15–18.

[85] J. Axelrod *et al., op. cit.*

[86] See also Katz *et al.,* 1968; Trent and Medsker, 1968; and Feldman and Newcomb, 1969.

[87] SCOPE, unpublished data. Center for Research and Development in Higher Education, University of California, Berkeley, 1969.

[88] J. Katz, *et al., op. cit.*

[89] Hazen Foundation, *op. cit.*

[90] J. Katz, *et al., op. cit.*

[91] D. V. Tiedeman, *et al., Career Development: Choice and Adjustment.* Princeton, New Jersey: College Entrance Examination Board, 1963.

[92] D. E. Super, *et al., Career Development: Self-Concept Theory.* Princeton, New Jersey: College Entrance Examination Board, 1963.

[93] J. Katz, *et al., op. cit.*

[94] J. Katz, *et al., Class, Character, and Career.* Institute for the Study of Human Problems, Stanford University, 1969.

VI. ECONOMIC RELEVANCE

Education has economic relevance to the extent that it develops modes of individual action which are useful to society at large. That is, economic relevance stems from the relation of education to work. Most observers readily agree that the development of human resources is a vital national objective. Most also agree that education is a primary route to a better job. These two generalizations are largely based upon self-evident rationale, observation of differences among nations [95] and the oft-documented relationship between educational attainment and income.[96] Most of the interesting and important questions lie in the murky midrange between these two truisms.

Two general questions serve to illustrate the complexity of the issue. What is the economic value of education? How much education is needed at what levels? Becker's provocative theory of human capital suggests, under empirical test, that the rate of return for individual investment in formal education is substantial and the effect of a college degree itself is greater than the effect due to ability differences among individuals.[97] It is noted, however, that this pioneer analysis is concerned almost completely with monetary gain and does not include indirect effects on the economy, social benefit, or nonmonetary gain to the individual, each of which might be judged a more critical outcome of the investment of human capital in education.

There are a good deal of data available but few empirical grounds for agreement on how much education the economy needs. Various writers have suggested that additional vocational training may be necessary to reduce unemployment among youth.[98] Followup studies [99] and cost-benefit analyses [1] support the general assumption that current vocational training programs serve the economic interests of individuals and society. On the other hand, jobs now requiring postsecondary training do not account for much more than one-third of the work force [2] nor is that proportion projected to increase substantially in the 1970's.[3] Also, Jaffe and Froomkin point out that the number of jobs dropouts can perform is increasing faster than dropouts.[4] These authors argue that higher unemployment rates of blacks and youth must be attributed to the fact that employers give preference to better educated applicants. This implies, in turn, that the main effect of wider training would be to place others at the end of the employment line.

These conflicting lines of evidence tend to confirm that educational opportunity is more a social and political matter than it is economic or educational. Nonetheless, economic and educational considerations are critical in expanding relevant opportunity. Two major considerations are the relevance of occupational training and accurate estimates of manpower requirements. The first is a short-term form of economic relevance. The second, being long term, operates with greater lead time requirements and less reliable information.

Occupational Training

The National Commission on Technology, Automation, and Economic Progress warned that the high rate of unemployment of youth and blacks will likely continue to rise unless they can increase their representation in expanding occupations at a faster rate than has been true in the recent past.[5] And Knoell emphasizes the importance of a definite occupational outcome in attracting marginal youth to postsecondary education.[6] One of the most provocative possibilities in meeting this problem is the previously mentioned New Careers movement.

The basic idea of New Careers is to establish career ladders containing specific grades of advancement for the undereducated poor, each grade being associated with levels of training and supplementary education. The emphasis is upon the career and a solution to the major problem of the underemployed—an immediate job with a future. This emphasis upon the job should tend to promote occupational relevancy of the training, though pilot programs are too few and too recent to judge. At any rate, the approach is quite novel and unusually promising.

Conventional matters of fit between individual curriculums and corresponding occupations have been handled in one of two ways. Well established professions requiring more than 2 years of postsecondary education have frequently developed national accrediting organizations which insure an acceptable degree of short- and long-term curriculum relevance.[7] The relevance of vocational and technical training has more often been the responsibility of advisory committees from local business and industry working with individual schools and colleges. Curriculum relevance is probably more important at this middle manpower level than at the B.A. level to most youth continuing education after high school.

It is estimated that there are 20,000 groups advising vocational educators across the country.[8] They have the virtually unanimous endorsement of unions, education, and industry. Whether such groups operate effectively is considerably less certain.[9] These two references, plus a third,[10] should help if they are heeded. Each includes many useful suggestions concerning effective operation of advisory committees. The acid test, however, is what happens after the student leaves the program. Even though this form of educational relevance should be relatively easy to evaluate, the amount of research and evaluation is described as "minuscule."[11] Systematic programs of followup and feedback to curriculum review groups should be an integral part of all vocational education programs.

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[95] F. Harbison and C. A. Myers, *Education, Manpower and Economic Growth.* New York: McGraw-Hill, 1964.

[96] M. C. Fountain, "What Is Education Worth?" *Occupational Outlook Quarterly,* 1968, Vol. 12, No. 4, pp. 26–27.

[97] G. S. Becker, *Human Capital.* New York: National Bureau of Economic Research, 1964.

[98] P. Arnow, "Bridging the Gap From School to Work." *Occupational Outlook Quarterly,* 1968, Vol. 12, No. 4, pp. 28–31.

[99] J. K. Little, *Review and Synthesis of Research on the Placement and Follow-up of Vocational Education Students.* Columbus, Ohio: Center for Research and Leadership in Vocational and Technical Education, Ohio State University, 1970.

[1] J. J. Kaufman, *et al., A Cost Effectiveness Study of Vocational Education.* University Park, Pa.: Institute for Human Resources, October 1963.

[2] C. A. Pearce, "Need for Manpower Information in the Field of Occupational Training and Education." Special Labor News Memorandum 107. New York State Department of Labor, 1965.

[3] U.S. Department of Labor, *Manpower Report of the President.* Washington, D.C.: USDL, 1968.

[4] A. J. Jaffe and J. Froomkin, *Technology and Jobs.* New York: Frederick A. Praeger, 1968.

[5] National Commission on Technology, Automation, and Economic Progress, *Technology and the American Economy.* Washington, D.C.: U.S. Government Printing Office, 1966.

[6] D. M. Knoell, *Toward Educational Opportunity for All. op. cit.*

[7] U.S. Office of Education, *Accredited Higher Institutions 1964.* Washington, D.C.: USOE, 1965.

Manpower Requirements

A few professions such as engineering have devoted close attention to manpower requirements for many years, but as Folger states, "Most of such planning has been done at the State and local levels and has been concerned with planning for more pupils, rather than with planning the kind of education needed for greater economic growth."[12] Bowman has described the very recent development of interest in educational planning in the field of economics.[13]

The Mediterranean Regional Project of the Organisation for Economic Co-operation and Development is one of the first attempts to develop educational plans on the basis of comprehensive manpower requirements. Hollister's empirical evaluation of this model verified that manpower requirements have a considerable effect on the educational system but two problems loom large.[14] Small errors in estimating technological change have significant effects upon the occupational structure and consequently wipe out careful estimates of manpower requirements. But the weakest link and most serious problem in the manpower estimating procedure is the lack of precise knowledge regarding educational needs associated with each occupation.

Recent work of the National Planning Association provides another example of broad educational planning through estimation of manpower requirements—in this case the requirements to pursue a series of national goals defined by a Presidential Commission during the Eisenhower Administration. Lecht reports that achievement of these goals by the mid-1970's would require an employed labor force of 100 million, some 10 million more than are expected by 1975. Vigorous pursuit of these goals would require upgrading through education and retraining, thus creating better opportunities for underutilized human resources. Lecht also reports that the kinds of jobs and the kinds of education required "in the 1970's will be significantly influenced by the Nation's choice of priorities."[15]

In this connection it is worth noting that the manpower requirements projected were, in all occupational categories, within 1 percent of the proportional distribution obtained by conventional methods. Another fly in the estimating ointment is the fact that the process sometimes works in circular fashion. In the examples above educational needs were based upon manpower requirements; in turn, Goldstein cites expected educational levels as one of the primary bases for projecting the labor force.[16]

Furthermore, the pace of technological change makes it insufficient to rely upon estimates of need in specific occupations. It is also important to develop better means of anticipating what skills and intellectual competencies society needs. Only through a broader view can the educational requirements of the economy be protected from the vagaries and parochialism of professional interests.

These two forms of economic relevance—occupational relevance and manpower relevance—are uncommonly complex and seem unlikely to submit to easy solutions through local efforts. Venn's recommendation that a continuing national research and planning body should be established to consider priorities in vocational education is well taken.[17] There is reason to question, however, whether the area of concern is not relevant educational opportunity and outcome in its many facets, all of which need joint consideration.

VII. EVALUATION, PLANNING, AND STIMULATION

The various issues outlined in the previous sections are mostly specific substantive problems. There are additional overriding issues which stem from the assumption that universal postsecondary education is a public responsibility requiring protection of public interests. These issues are concerned with the problems of centralized evaluation, planning, and stimulation of relevant educational opportunity.

The literature concerning the relevance of postsecondary education illustrates two general weaknesses which cut across the issues already discussed. One is the need for more complete information in order to evaluate different aspects of opportunity and relevance. The other is generally inadequate resources for analyzing that information, drawing programmatic implications, and interpreting those implications to the public and others directly involved. These needs exist in somewhat different form at the institutional, State, and national level.

At the institutional level, the problem is to stimulate a broadened view of the educational process and to promote among the faculty greater attention to student development and its evaluation. Institutions need to make a serious attempt to study input-output characteristics with particular attention to interests, values, and the student's impression of his educational experience. Such measures need to be related to the purpose and objectives of the institution, the way it functions, and current important issues on the campus and in the broader community.

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[8] L. A. Burkett, *The Advisory Committee and Vocational Education*. Washington, D.C.: American Vocational Association, 1969.

[9] S. M. Burt, *Industry and Vocational-Technical Education*. San Francisco: McGraw-Hill, 1967.

[10] American Association of Junior Colleges, *The Role of the Advisory Committee in Occupational Education in the Junior College*. Washington, D.C.: AAJC, 1967.

[11] J. K. Little, *op. cit.*

[12] A. Elam and W. P. McLure, eds., *Educational Requirements for the 1970's*. New York: Frederick A. Praeger, 1967.

[13] J. M. Bowman, "The Human Investment Revolution in Economic Thought." *Sociology of Education*, 1966, Vol. 39, pp. 111–137.

[14] R. Hollister, *A Technical Evaluation of the First Stage of the Mediterranean Regional Project*. Paris: Organisation for Economic Co-operation and Development, 1967.

[15] L. A. Lecht, *Manpower Needs for National Goals in the 1970's*. New York: Frederick A. Praeger, 1969.

[16] H. Goldstein, "Projections of the Labor Force of the United States," in G. L. Mangum, *The Manpower Revolution*. New York: Doubleday, 1965.

[17] G. Venn, *op. cit.*

There should be at every institution a prominent focus of attention on the personal and academic goals of students—to what extent those goals are attained, how they relate to the operation of the institution, and how they can be furthered. There is an accumulating literature on such evaluation work.[18] Its value will be measured by the extent to which it stimulates the faculty to renew its traditional interest in the student and his education.

At the State level the extremely complex problems of central planning are just now becoming evident. On the one hand the State master plan approach has been accepted more rapidly than seemed possible just a few years ago.[19] This movement has undoubtedly been instrumental in solving quantitative problems of expanding enrollments,[20] and some recent plans have become truly comprehensive in advocating relevant postsecondary education for all youth [21] or financial support for all forms of need.[22]

But there are problems. Many have marveled at higher education's ability to call its own shots,[23] and also warn that it "must become more specific than ever as to why the society should support it and utilize its services."[24] This sentiment and the legislative pressure attending soaring costs have given impetus to the planning-programing-budgeting systems developed in the Defense Department.[25] Whereas the so-called PPBS methods have no doubt been of great service in running giant organizations, they are criticized for impeding educational change and imposing overly rigid manpower criteria to the evaluation of programs.[26]

Few States have anything remotely resembling the sort of information on their high school seniors which would permit and encourage a thorough analysis of opportunity for postsecondary education and its outcomes. The early studies of Wisconsin and Minnesota youth are well-known.[27] Recently other States have taken initial steps to develop information for planning which takes individual and social needs into account.[28] Such data ought to include information concerning the background, school preparation, interests, educational-vocational aspirations, and plans of high school seniors plus their experiences in seeking work or further education after high school.

It seems essential that the boards which coordinate postsecondary education in the various States have such information in order to balance the fiscal, political, and established interests normally expected in any planning which involves large investments of funds and commitments. Pertinent data on the needs of young people and some infusion of their voice in the planning process should help to meet the "qualitative crises" in State planning to which Palola *et al.* refer.[29]

Problems of national planning are similar to those at the State level but place more emphasis on identification of critical issues and programmatic solutions rather than implementation and administration. The school-college and education-work transition points are critical because they represent social discontinuities where unnatural barriers are apt to be erected.

At present the Nation is sorely put to judge what goes on at those transition points because the available data are fragmentary and unconnected. A good example is vocational education. Sometimes it is overlooked in discussions of postsecondary opportunity and often the relevant data cannot easily be integrated with the data from conventional higher education. But a better example is the inexcusable lack of systematic collection of national data centered upon the student and his educational-vocational needs. Occasional surveys are made, but they serve limited purposes often unrelated to important questions of educational opportunity.[30] As at the State level, it seems critical that a nationally representative group of seniors be surveyed each year concerning their characteristics and their postsecondary plans and experiences.

Such surveys could provide routine estimates of financial restraints and whom they affect, social inequities in rates of access to different types of education, the effectiveness of Federal programs, the extent of talent loss, the effects of inadequate facilities, the influence of school and community on realization of aspirations, and whether the outcome of postsecondary education is satisfying and useful to the student.

Other types of data which are badly needed include knowledge of the experience of students who do not continue their education, annual estimates of need for training in specific areas, need for the development of particular skills and intellectual talents, and statistics on vocational and other education in the same framework with traditional educational data from schools and colleges.

Information of this sort is needed as a basis for important functions which can only be served at the national level. It is highly desirable that periodic barometer readings of educational opportunity be available much like the recently proposed "social report" to the Nation.[31] Various indices of educational opportunity could serve not only to suggest remedial action but also to inform the public and to develop support for action.

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[18] See, for example, Knoell, 1968; Drewry, 1967; Ferguson, 1967; Cross, 1968; Astin, Panos and Creager, 1967.

[19] T. R. McConnell, *A General Pattern for American Public Higher Education*. New York: McGraw-Hill, 1962.

[20] E. G. Palola *et al.*, *Statewide Planning in Higher Education*. Berkeley: Center for Research and Development in Higher Education, University of California, 1969.

[21] Board of Higher Education of the City of New York, *op. cit.*

[22] R. Pearson, *The Opening Door*. New York: College Entrance Examination Board, 1967.

[23] C. Jencks and D. Riesman, *The Academic Revolution*. Garden City, New York: Doubleday, 1968.

[24] L. B. Mayhew, *Colleges Today and Tomorrow*. San Francisco: Jossey-Bass, 1969.

[25] J. A. Thomas, "Cost-benefit Analysis and the Evaluation of Educational Systems." *Proceedings of the 1968 Invitational Conference on Testing Problems*. Princeton: Educational Testing Service, 1969.

[26] L. J. Livesay, Jr. and E. G. Palola, "Statewide Planning for Higher Education." *Encyclopedia of Education*, New York: Macmillan, in press.

[27] J. K. Little, *et al.*, *Explorations into the College Plans and Experiences of High School Graduates, A Statewide Inquiry*. Wisconsin University, Madison, School of Education, September 1959. See also R. F. Berdie, *After High School—What?* Minneapolis: Univ. of Minnesota Press, 1954.

[28] C. Clear, "A Report on a Study of the Postgraduate Plans of 1967 High School Seniors." *Public Education in Virginia*, 1967, Vol. 3, No. 2, pp. 1–7. See also C. W. Grant, "A Follow-up Study of Spring 1966, High School Graduates in the State of Utah." *The Personnel and Guidance Journal*, 1968, Vol. 47, pp. 157–162.

[29] E. G. Palola, *et al.*, "Qualitative Planning: Beyond the Numbers Game." *The Research Reporter*, 1968, Vol. 3, No. 2, pp. 1–4.

[30] See, for example, Cole, 1957; Seibel, 1965; Tillery, 1969; Flanagan *et al.*, 1964; U.S. Bureau of the Census, 1969.

A prominent public forum should provide periodic review of the status of educational opportunity. Supported by a professional staff to gather and interpret appropriate information, a group of responsible citizens could bring an effective voice to problems in need of solution. This seems a small commitment to a social process now judged so critical.

VIII. SUMMARY

During the past two decades there has been a vast expansion of postsecondary education. It is the common assumption that there will be further expansion in order to equalize opportunity and utilize human talent to the fullest extent possible. Additional enrollments will be heavily represented by students whose background, interests, and competencies differ from those of traditional college students. It is therefore important to consider the relevance of postsecondary education with particular attention to those students whom expanded opportunities would be intended to serve. The relevance of postsecondary education can be classified into four categories.

Within these categories of relevance, there can be identified 10 issues which likely restrict relevant educational opportunity in undesirable ways. These issues are by no means exhaustive with respect to opportunity or to educational relevance but they do suggest important needs at the intersection of the two. The categories of relevance and the major issues are, in brief:

1. *Personal Relevance* is the extent to which education provides equal opportunity for individuals to define their roles and responsibilities in society—equal opportunity regardless of background, talents, or social conditions. Four potential barriers are:

a. Financial Restraints—Money is an important problem for two simple reasons. Those now continuing education beyond high school are squeezed by increasing costs, and those who might be attracted to do so seem very reluctant to forego earnings and accept a financial burden made especially heavy by a typically low-income position. Whereas all forms of financial aid are needed in much greater supply than they now exist, expanded and strengthened loan and student work programs seem particularly attractive for a variety of social and educational reasons.

b. Academic Standards—There is a good deal of evidence that traditional procedures and measures used by schools and colleges are unduly rigid in channeling talent. There is need to develop broader interpretations of talent and educational programs and to improve connections between the two. There is even greater need to develop flexible means of keeping open many educational-vocational options to students as they mature.

c. Accessibility of Facilities—Research shows fairly conclusively but in very little detail that simple proximity to an open-door, inexpensive institution has considerable impact on the rate of college-going in the immediate area. Expanded educational opportunity seems to depend in great measure upon the existence of relevant, accessible programs in individual communities, though the relationship between demographic factors and local relevant opportunity requires much additional study.

d. Social Differences in Access—Since education beyond high school is a voluntary move to an institution somewhat unconnected with the secondary level, there is ample chance for *de facto* imbalances in opportunity associated with race, class strata, accidents of geography, etc. Such imbalances need to be systematically identified and ameliorated whether they are reflected as lack of reasonable motivation, discrimination, or other forms of social bias.

2. *Social Relevance* refers to the capacity of postsecondary education to reorganize social roles and to marshal intellectual and moral resources in response to immediate social problems. Two major current problems are:

a. Social Commitment—The student's most frequent complaint regarding the relevance of his education is the inadequate sense of community and social consciousness he finds on the campus. One possibility for involving students and faculty in the real social problems of their immediate environment is to encourage the development of interdisciplinary centers of community service at many institutions, regardless of size or location.

b. Service to New Students—Expanding educational opportunity has brought the reality of new types of students and the difficult job of providing relevant education. Most innovations have been one of three types: Minority culture programs such as black studies, bootstrap programs in conventional settings, and the very promising New Careers movement which emphasizes "job now—degree later" plus coordinated education for specific higher positions.

3. *Educational Relevance* involves helping students to learn modes of action required to fulfill adult responsibilities; in addition to occupational preparation these include the ethical values, social skills, and personal confidence necessary to pursue careers with success and satisfaction. Two important issues are:

a. Instructional Quality—There is a good consensus that current attitudes about the teaching-learning process are outmoded and that instruction needs to be broadened with respect to: areas of instruction, types of student experience, methods of instruction, types of learning situations, kinds of faculty, and methods of evaluation.

b. Student Development—Many writers have emphasized the urgent need to give much closer attention to the development of the student—the development of his career, his competencies, and his personal interests, and values. The central problem as commonly perceived is that of renewing the faculty's interest in the student. This probably means adjusting the professional reward system.

4. *Economic Relevance* means development of modes of individual action which are useful to society at large; in particular, it means a fit between educational outcomes and

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[31] U.S. Department of Health, Education, and Welfare, *Toward A Social Report*. Washington, D.C.: USDHEW, 1969.

occupational requirements and opportunities. Two principal aspects are:

a. Occupational Training—Well-established occupations requiring extended training have often developed professional accrediting groups to ensure that education is relevant to career requirements. The relevance of vocational education is largely monitored through local advisory groups with uneven effectiveness. Curriculum evaluation on the basis of student followup studies into work situations is presently rare but appears to be the most promising way to strengthen the relevance of occupational training.

b. Manpower Requirements—It is only very recently that there have been serious attempts to develop general educational plans on the basis of manpower requirements. These studies confirm a vital connection between the two but suggest a host of technical problems which are not likely to be solved without the coordinated attention of education, industry, and research specialists.

In addition to these substantive problems there is a general set of concerns which stems from consideration of public responsibility for coordinating relevant educational opportunity in a highly complex society. This coordination involves:

Evaluation, Planning, and Stimulation—If society allows its vital interests to run loose, they are not likely to be looked after by individuals. Assuming that equal opportunity for relevant postsecondary education is a vital public interest, there are essential centralized functions which must be performed at the institutional, State, and national levels—but always in a manner which does not debilitate the appropriate autonomy of the level below. These central functions are concerned with evaluating, planning, and stimulating equal and relevant opportunity. The main issues are to create new forms of educational evaluation in institutions, to develop State planning which reflects adequately the students' needs, and to establish a national basis for understanding the problems and the importance of expanded educational opportunity.

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Trends In Secondary School Vocational Education Which are Likely to Affect Postsecondary Education Demands

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I. INTRODUCTION

This study concentrates on trends in vocational education which appear to be most likely to have significant effects upon future demands for postsecondary education.

Although there is a dearth of data regarding secondary school vocational education and its relationship to postsecondary education, enough facts are available from sample studies to provide a fairly clear picture of what is happening in these areas. Certain myths, nevertheless, have risen that tend to confuse the picture, and these, all familiar, state that:

1. Few vocational students go on to postsecondary education. Actually nationwide, 20 percent continue, and one study shows 51 percent, if part-time attendance is included.
2. Vocational education is taken principally by males. The fact is that more than 40 percent of females and 25 percent of males are in secondary school vocational education curriculums, with the heaviest enrollment of any vocational program being in commercial and business subjects.
3. High school dropouts come principally from the vocational education curriculum. Studies show that 67 percent of dropouts come from the "general" curriculum.
4. Vocational education enrollments are at about the same level in each State. These enrollments range from 10 percent to 50 percent of high school students.
5. Vocational education classes are boring and do not interest capable students. Studies indicate that one-third of vocational students are above average in academic aptitude, and some of the most able students are enrolled.
6. High school students prefer to take a liberal arts program in college, and do not think of college as a means of getting vocational education. Actually, less than 10 percent desire liberal arts, and two-thirds of those who plan to go to college "agree very much" that "college is a place where you prepare for a job."
7. Placement rates of vocational graduates are low. The data show that 80 percent of graduates who don't go on to college are placed in occupations related to their training.
8. College preparatory students who graduate from high school but do not go to college earn better wages than other high school graduates. In fact, they don't do as well as dropouts, at least for the first year after graduation. Vocational graduates are ahead for at least the first three jobs held.
9. Employer-sponsored training is more readily available to college preparatory high school graduates than to graduates of vocational curriculums. In Massachusetts, as one example, 76 percent of such trainees were graduates of the vocational curriculums.
10. High school graduates place low value on vocational education and are likely to conceal the fact that they have had vocational courses. Studies show that 95 percent claim to have had such courses, far more than could possibly have taken them.

The substance of this study will deal with the effect of these contradictions on planning for the quantity and type of postsecondary education needed in this country.

II. SETTING OF VOCATIONAL EDUCATION IN SECONDARY SCHOOLS

Curriculums

There are three principal curriculums in high schools in the United States: college preparatory, which enrolls almost 50 percent of the male students and 35 to 40 percent of the females; "general," which enrolls almost 25 percent of the males and 20 percent of the females; and vocational, which enrolls about 25 percent of the males and 40 to 45 percent of the females.[1] All of these figures are based on Project TALENT questionnaires which asked high school seniors to state the curriculums in which they were enrolled. U.S. Office of Education figures on the proportion of students enrolled in reimbursed vocational programs are somewhat smaller but not too dissimilar except in the case of women. According to Project TALENT, over 85 percent of the female students who say they are enrolled in vocational curriculums specify that they are in commercial or business curriculums. Much of this instruction, apparently, is not counted by USOE. On the other hand, students enrolled in homemaking, who are counted, are forced by the form of Project TALENT questions to indicate that they are in the "general" curriculum.

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[1] J. Flanagan, *et al., The American High School Student* (Project TALENT). Pittsburgh, Pa.: University of Pittsburgh, 1964, pp. 5–11 and E–2.

Typical USOE figures show 25 percent of secondary education students taking vocational education courses at any one time. This figure is not as helpful as it might be, however. Not only does it fail to give a breakdown by sex, but, since vocational courses in secondary school range from 1 to 4 years in length, or even less, it provides no indication of the number of graduates.

In another way, however, it supplements Project TALENT data very well. Project Talent gives no State-by-State data. USOE shows that secondary education vocational enrollments by States range from 10.5 percent to over 50 percent. Generally, the South and border States have enrollments far above average, while low enrollments are found in the Midwest. It is difficult to understand why enrollments should be high in Vermont, Utah, and New York when their neighboring States of Maine, Colorado, Connecticut, and New Jersey are among the lowest in enrollments.[2]

The definitions provided for the curriculums by Project TALENT are certainly in accord with reality. The general curriculum "does not necessarily prepare you either for college or for work," but consists of courses required for graduation plus "subjects that you like." The college preparatory program gives you "the training and credits needed to work toward a regular bachelor's degree in college." Project TALENT subdivided the vocational curriculums into three parts: commercial or business ("prepares you to work in an office"), vocational ("prepares you to work in a shop or factory, or to enter a trade school, or become an apprentice"), and agriculture (no definition).

The course content of the college preparatory, general, and vocational curriculums has more similarities than differences. In most schools half of the program is identical for all three. Where tracking is done, it tends to be done on the basis of academic ability. While the mean level of such ability is different for the three curriculums, all have a substantial number of students at each academic ability level, rather than being divided on the basis of the curriculum in which the student is enrolled. In the general curriculum, the remaining half of the program usually is made up of electives. Vocational and college preparatory students are required to take additional courses, especially in communications, scientific, and mathematics areas. The vocational program rarely requires that more than one-fourth of the time in high school be spent in courses designed to prepare a student for a sizable group of related occupations.

Small schools often have no general curriculum and offer only agriculture and home economics vocational curriculums. Suburban schools often have no vocational curriculums for males. In both small rural schools and suburban schools the college preparatory curriculum often enrolls 70 percent of the students.

It is remarkable that there are any programs of vocational education at the secondary school level if the attitudes of a sample of 180 junior high school principals are typical among school administrators. Asked in 1969 to list the primary goal of junior high school education, 61 percent replied "college preparation," and 11 percent listed "preparation for high school."[3]

Secondary Schools Offering Vocational Education: Numbers, Enrollments, and Graduates

In 1964–65, 16,332 secondary schools offered federally reimbursed vocational education. In the following school year, the number decreased slightly to 16,023.[4] This figure is nearly meaningless, since a school was counted if it offered even one class in one vocational subject. By accepting this figure at face value, it could be assumed that vocational education was nearly universally available, since there are only about 18,000 high schools in the Nation. In fact, however, vocational education is not generally available except for agriculture and home economics, along with such courses as beginning typing.

U.S. Office of Education figures indicate that total enrollment in federally reimbursed secondary vocational education was slightly over 3 million in 1965–66. Almost half of this enrollment (1,280,000) was in home economics. The other large program is office occupations (798,000). The two together account for two-thirds of the enrollment. Almost all enrollment in these two programs is female. The same is true in health occupations (10,000), and it is nearly true for distributive education (102,000). The 510,000 enrollment in agriculture is heavily male and almost all outside the large cities. This leaves two programs—trades and industries (319,000) and technical education (29,000), having a total of 12 percent of the vocational enrollment—available for males in large cities. Actually, the bulk of enrollment in even these two programs is outside the large cities.

As Mangum noted, if persons past the age of high school attendance are asked about their secondary school vocational training, their answers can be shown as in table 1.[5]

TABLE 1.—*Types of Vocational Courses Taken, By Sex*

Vocational Courses Taken	Males (In Percent)	Females (In Percent)
Typing	37	73
Bookkeeping	16	40
Home Economics		75
Shorthand		40
Agriculture	24	
Carpentry	30	
Machine Shop	30	
Metalworking	30	
Took a Vocational Curriculum		
Graduates	38	50
Dropouts	30	30

There are no available figures on the number of vocational education secondary school graduates.

Assuming the following:

a. Number of high school graduates for 1968–69 was 1,385,000 males and 1,406,000 females;[6]

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[2] U.S. Office of Education, *Vocational Education: The Bridge Between Man and His Work.* General Report of the Advisory Council on Vocational Education. Washington, D.C.: Government Printing Office, 1968, p. 20.

[3] T. A. Sinks and J. E. Hess, eds., *Knowledge for What? The Purposes of Junior High School Education.* Danville, Illinois: Interstate, 1969, p. 121.

[4] U.S. Office of Education, *op. cit.*, p. 27.

[5] G. Mangum, "Second Chance in the Transition from School to Work," in *Transition from School to Work.* Princeton: Princeton University, 1968, p. 242.

[6] U.S. Office of Education, *Projections of Educational Statistics to 1975–76.* Washington, D.C.: Government Printing Office, 1966, p. 25.

TABLE 2.—*Estimated number of 1968-69 Vocational Curriculum Graduates Secondary School*

	Males		Females	
	Rate	Number	Rate	Number
Based on 1963 Labor Department Survey	38%	753,000	50%	1,005,000
Based on 1963 Project TALENT Data	25%	495,000	40–45%	804,000 844,000

b. Secondary education enrollments in vocational education increased 43 percent from 1963–64 to 1965–66;[7]

c. Since the average length of secondary school vocational programs is nearly 2 years, it would take 2 years for this increase in enrollment to result in a comparable increase in numbers graduated.

Therefore the 1968–69 graduation figures in vocational education would be as shown in table 2.

Projections based on Project TALENT data are probably more nearly accurate, since they were based on responses of high school seniors. The Labor Department survey was based on responses of adults, who regularly overestimate the amount of vocational education they have received.

Characteristics of Students

With only the few exceptions described later, data are not available on characteristics of students enrolled in each of the innovative programs in secondary school vocational education. Lacking this information, data were collected here for the first time on a number of important characteristics of vocational students as a group. Even this information is quite incomplete.

Sex of Students

Vocational education is generally assumed to be a curriculum for males. That this is not true for high school seniors is illustrated graphically by the following table adapted from Project TALENT data.

TABLE 3.—*Percentages of Students by Curriculum*

Curriculum	Males	Females
A. General	24.8	18.9
B. College Preparatory	48.2	37.8
C. Commercial or Business	7.1	37.1
D. Vocational (for shop or factory)	12.4	3.3
E. Agriculture	4.1	.3
F. Other	3.3	2.6

Adding percentages in the three vocational curriculums C, D, and E yields 23.6 percent for males and 40.7 percent for females.

Academic Aptitude of Students

Female vocational students are not only more numerous than male vocational students, but they have on the average markedly higher academic aptitude, as taken from the Project TALENT data and shown in table 4. Nevertheless, each curriculum had significant numbers of male and female students at every level of academic aptitude.

TABLE 4.—*Percent of Enrollees Above 50th Percentile In Academic Aptitude*

Secondary School Curriculum	Males	Females
College Preparatory	69	77
General Curriculum	31	35
Vocational	23	43

SOURCE: Flanagan, 1964, p. E-2.

For males, the heaviest enrollment in vocational courses comes at the 40th percentile of academic ability. These students average two such courses (four semesters) in 4 years. Students in the lowest 10 percent of ability averaged less than 1½ year-long courses, but even students in the top 10 percent took one such course, on the average.

For females, the pattern was not too dissimilar. Those in the top and bottom 10 percent of academic ability averaged two semesters of commercial subjects, while the remaining 80 percent averaged four semesters.

Age of Students

Although it could easily be collected, there are no data available on the age of secondary school vocational students. It is known that relatively few 14- and 15-year-olds are enrolled (agriculture and home economics enroll almost all of the students in this age range). Vocational enrollment increases rapidly from age 16 to high school graduation, for the remaining vocational education programs enroll students primarily for the last year or 2 years of high school. Very few students remain in high school beyond age 18.

Since the largest number of students drop out of high school at age 16, most dropouts have not been exposed to vocational education. Yet 70 percent of males and 90 percent of females report having had one or more vocational courses. Presumably they are counting, in the main, the often required junior high school courses in industrial arts and home economics, plus beginning typing, which had been taken by 50 percent of the female dropouts.[8]

Dropouts

Combs and Cooley report that 51 percent of freshmen who later dropped out of high school wanted a vocational education curriculum, but only 23 percent were admitted to one.[9]

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[7] U.S. Office of Education, *Vocational Education, op. cit.*, p. 18.

[8] G. Mangum, *op. cit.*, p. 244.

[9] J. Combs and W. W. Cooley, "Dropouts: In High School and After School" in *American Education Research Journal*, Vol. 5, No. 3, 1968, pp. 343–363.

By contrast, 48 percent of freshmen who completed high school but did not go on to college wanted vocational education, and 43 percent got it. At the time of leaving school, 67 percent of the dropouts were in the general curriculum, 4 percent in the college preparatory curriculum, and 23 percent in a vocational curriculum. Comparable figures for those who graduated from high school but did not attend college were 36 percent, 14 percent and 43 percent (these figures do not add to 100 percent since some students said they were in "other" curriculums).

Race of Students

Almost all of the pertinent data on race have been collected by Parnes.[10] His first report (1969) deals only with males. He found that 12 percent of white men 16 to 17 years old were enrolled in vocational and commercial curriculums as compared with 15 percent for Negroes. In sharp contrast, of those males 14 to 24 years old who had not completed college and were not enrolled in school, 45 percent of the whites but only 25 percent of the Negroes had obtained "vocational training outside regular school." This included apprenticeship, company training programs, business college, technical institutes, or other similar programs.

The report of the Advisory Council on Vocational Education points out that no data are available on vocational education enrollments of minority group members. It notes that "proportionally a high ratio of Negroes are enrolled in vocational schools which are de facto segregated."[11]

Schaefer and Kaufman quote from an earlier study which indicated that while Negro graduates of all curriculums earned less than white graduates, the comparative disadvantage of Negro vocational graduates was less.[12]

Eninger found that Negro graduates of trade and industrial vocational curriculums took twice as long as whites to find employment, and were half as likely to secure employment in the occupation for which trained.[13] Negroes were less likely than whites to get help from the school in job placement, but relied on friends and relatives. They had less job security, less job satisfaction, and lower earnings, though not lower hourly wages, than whites. Negro graduates in vocational education were more likely to get higher education than whites who graduated from this curriculum. Only 7 percent of Eninger's usable questionnaires came from nonwhites. It is likely that the plight of nonwhite vocational graduates has improved in the past few years, but to what extent is not known. The overall rate of youth unemployment for Negroes remains far higher than for whites.

Socioeconomic Status of Students

Little information is available on this subject. Schaefer and Kaufman found that the fathers of over half of the vocational students—both male and female—were employed as laborers or craftsmen-foremen, while one-third of the fathers of college preparatory students were in these occupational groups.[14] College preparatory students were twice as likely as vocational students to have fathers employed as professionals. Using the father's occupation as a measure of socioeconomic status, it is clear that, from low to high, the ranking of curriculums is: vocational, general, and college preparatory, with each being approximately equally spaced along the continuum.

Student Attitudes Toward College

Unfortunately, Project TALENT information has not been tabulated in a way which allows differentiation of student attitudes by secondary school curriculum taken.

Tillery and Donovan indicated repeatedly that high school juniors who expect to drop out, graduate from high school, or graduate from junior college or postsecondary vocational school all have similar attitudes, and have quite different attitudes from students who expect to graduate from 4-year colleges.[15] For example, the males in the former group most frequently choose shop, drafting, and industrial arts as their most interesting subjects, while females choose business, commercial, and similar subjects. Males who expect to take baccalaureates choose science, social studies, and history, while females choose English and speech. Tillery and Donovan found that three-fourths of the former group would like to be in occupations other than the professions. For the former group, the plurality of males would choose vocational, trade, and industrial subjects as college majors, and a plurality of females would choose business. Potential 4-year college graduates chose majors spread widely through the professional fields. Less than 4 percent of males and 8 percent of females would choose liberal arts as a major regardless of their expected level of educational attainment. All types of students agreed by a large majority that college is a place where you prepare for a job.

Actual Attendance in College

Schaefer and Kaufman in their study of Massachusetts youth present the only data which could be found on college-going rates for all of the major secondary school curriculums. They found that 35 percent of vocational graduates and 41 percent of college preparatory graduates enrolled in postsecondary education. In marked contrast, only 9 percent of the graduates of the general curriculum went on to school.

USOE figures indicate that nationwide, 23 percent of secondary school vocational curriculum graduates continued full time in higher education.[16] Since the Massachusetts study included part-time enrollments, there may not be a sizable discrepancy between the two figures.

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[10] H. S. Parnes, *et al.*, *Career Thresholds.* Columbus, Ohio: Ohio State Univ. Center for Human Resources Research, 1969. As quoted in Rosen, *Job Training of Blue Collar Workers: Implications for Vocational Guidance.* Washington, D.C.: U.S. Department of Labor, Office of Manpower Research, 1969.

[11] U.S. Office of Education, *Vocational Education*, *op. cit.*, p. 122.

[12] C. J. Schaefer and J. J. Kaufman, *Occupational Education for Massachusetts.* Boston, Mass.: Massachusetts Advisory Council on Education, 1968, p. 78.

[13] M. Eninger, *The Process and Product of T. and I. High School Level Vocational Education in the United States.* Pittsburgh, Pa.: American Institutes for Research, 1965, p. 19.

[14] Schaefer and Kaufman, *op. cit.*, pp. 74, 76.

[15] D. Tillery and D. Donovan, *A Study of Student Decision Making, and Its Outcomes: SCOPE, Grade Eleven Profile, 1968 Questionnaire, Selected Items.* New York: College Entrance Examination Board, 1969.

[16] U.S. Office of Education, *Vocational Education*, *op. cit.*, p. 31.

In the Schaefer and Kaufman study, 51 percent of those males who took work at public technical institutes or junior colleges were graduates of the vocational curriculum, but for females, 59 percent were from the college preparatory curriculum. Seventy-six percent of those who were enrolled in company-sponsored training programs were vocational graduates as compared with 12 percent from each of the other two high school curriculums. Fifty-one percent of the males and 62 percent of the females who took work at private trade schools were college preparatory graduates as compared with 35 percent from vocational curriculums and 10 percent from the general curriculums.

Status of Vocational Education in the Eyes of the Students

It is often reported that vocational curriculums have low status in high school. Schaefer and Kaufman report that 33 percent of the high school graduates of a vocational curriculum felt that they had been looked down upon because of the course they took, as compared with 38 percent of the graduates of the general curriculum and only 7 percent of the college preparatory graduates. At the same time 77 percent of the vocational and 87 percent of the college preparatory graduates would suggest that a young person starting high school follow their path. But only 39 percent of the general curriculum graduates would recommend it.

Even more striking is the fact that several U.S. Department of Labor studies report that 95 percent of high school graduates say they had one or more vocational courses in school before they were graduated.[17] Since no such number of enrollments is possible, one can conclude that some of these people saw nonvocational courses as vocational or invented courses. In either case, graduates would seem to be investing vocational education with considerable status.

Placement

Placement of vocational curriculum graduates has been as low as 60 percent at times during the last 20 years, but the most recent figures show 80 percent of those available for employment placed in occupations closely related to the field of training. Placement rates varied by field of training from a high of 92 percent in health-related occupations to 67 percent in agricultural occupations. As expected, placement rates were high in times of labor shortage, and lower in times of labor surplus.

Schaefer and Kaufman point out the secondary school was four times as likely to help find a job for vocational graduates as for graduates of other curriculums. Tillery and Donovan found that the higher the level of education sought by high school juniors, the higher the desire for a job which allowed them to create something original. The lower the level of education sought, the more emphasis on a job which provided plenty of leisure.

One year after graduation of their high school class, vocational graduates are earning the most money per year, followed by dropouts. Combs and Cooley also found that last in earnings come graduates of the college prep and general curriculums. Schaefer and Kaufman reported the same relationship was found among graduates, and it continued to exist for the first three jobs held. Indeed, the wage of the college prep graduate who did not go to college declined relative to the graduates of the other curriculums by the time of the third job. This would appear to indicate that while the secondary school college preparatory curriculum adequately prepares a student for college, it does not prepare him for employment success without college.

III. IMPORTANT TRENDS IN SECONDARY SCHOOL VOCATIONAL EDUCATION

While a considerable number of innovations have been tried here and there, with many offering promise for the future, they cannot as yet be considered trends, and are not included here. Included in this category are computer-assisted vocational guidance, early education about the world of work, zero-reject concepts, and coordinated vocational and technical curriculums extending from secondary school into the community college.

Labor Market Needs and Student Potential

Until 1963, Federal legislation directed secondary school vocational education to meet the needs of the labor market. Local advisory committees dominated by labor and management were strongly advised, so that the short-term needs of the local labor market were dominant. Prior to 1946, instruction could be offered only for occupations which required a long time to learn. Students were to be admitted only if they could profit from the instruction then being offered. The 1963 Vocational Education Act changed this philosophy to one of meeting the needs of individual students and suggested that admissions policies and instruction be modified to meet their needs, but most vocational education continued business as usual.

In 1968, Congress made it clear that it was not making an idle suggestion in 1963. Twenty-five percent of appropriations were set aside for vocational education for the disadvantaged and the handicapped effective with the 1969–70 school year. Earlier expenditures from vocational education funds for these two groups certainly did not exceed 5 percent. This new requirement almost certainly will raise the proportion of vocational students with below average academic ability from the present 77 percent of males and 57 percent of females, since the mentally handicapped and many of the disadvantaged tend to be well below average in verbal skills. It almost certainly will not decrease the number of above average students, since total appropriations are increasing markedly.

The primary effect on postsecondary schools could come from encouragement of additional students to attend college. While very few vocational teachers have ever discouraged students from attending college, State and Federal officials may have discouraged vocational students from attending college and have also discouraged publicity on the numbers of these students attending college. It is a general public impression, as a result, that it is impossible for vocational graduates to attend college. Almost certainly this false impression will change. It may change dramatically if present studies find, as they well may, that if academic ability level is held constant, a higher proportion of vocational graduates attend and succeed in college than do the graduates from the college preparatory curriculum.

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[17] G. Mangum, *op. cit.*, p. 244.

Postponement of Specific Training

So long as emphasis was placed on meeting the needs of the labor market, it was logical to postpone vocational education until just prior to the time when the student would enter the labor market. This was particularly true for programs which emphasized the development of specific skills, because such skills become obsolete more quickly than do general principles. In spite of the changes suggested in the preceding section, vocational education necessarily has a considerable tie to the labor market, if for no other reason than that to date it has been evaluated only on the basis of the success of its graduates in employment.

If the 13th and 14th years of education become nearly universally accepted, almost all vocational educators will do all they can to get specific skill training moved to that level. Some educators advocate high school level vocational education only for the "disadvantaged."

It is generally true, however, that middle-class people, including vocational educators, want a different type of education for their children than they prescribe for the "disadvantaged." Just as the prescription for the disadvantaged in early childhood education is "drill, drill, drill," so it is with vocational education. A relatively typical but usually unwritten view is expressed by Stadt, "... only the hard core misfit will benefit in secondary school vocational education programs ... he belongs in vocational education programs, and ... we must develop programs that get at understanding responsibility and all the rest that goes with the kind of positions hard core misfits can hope to fill."[18] We should not be sure that the disadvantaged will accept such discrimination. The most likely long-range solution would seem to be expanded enrollments in vocational education for both the advantaged and the disadvantaged, both high school graduates and dropouts, in community colleges, where most enrollees pursue an occupational or professional goal.

Development of Parallel School Systems

Most other nations have separate, parallel systems of secondary education for vocational and for college preparatory students. Educational reform in these countries concentrates on developments similar to our comprehensive high schools. But at various times and places, separate systems have existed in this country as well. The NYA schools which ended in the early 1940's and the Wisconsin system which existed for half a century are two examples of such programs which have been totally or partially abandoned. Most of our large cities built separate vocational high schools, but these are gradually being phased out, largely because they became racially segregated.

This does not mean that the concept of separate parallel schools is dead. The prevailing point of view of the Department of Labor is that the "time has come for us to recognize that the good vocational schools are capable of making an important contribution in developing the supply of our skilled workers. However, the only way they can really carry out this function is to separate out those students who need special treatment by developing a new institutional arrangement so that they can be taught in separate schools." Job Corps Centers and, more recently, Skill Centers have been set up to provide this "special treatment" which has not been available in most public schools.

The most rapidly growing organizational structure in vocational education is the area vocational school. It serves rural areas which will not or cannot consolidate secondary schools to achieve the 2,000 to 4,000 student enrollment which seems necessary for a fully comprehensive high school. The area vocational school has a potential for encouraging school consolidation by making people aware for the first time of the services which can be provided by a vocational program. But it could postpone consolidation by providing certain of these services without requiring the trauma of closing small high schools.

Both of these solutions, one sponsored by the U.S. Department of Labor and the other by the U.S. Office of Education, have numerous advantages. They suffer, however, from one tremendous disadvantage; they segregate students by socioeconomic level. There is no information available on the effect of these patterns of school organization on the rate of attendance in postsecondary education. It is likely, however, that both types of segregated occupational education will decrease the college-going rate.

Another type of parallel school system, the private vocational school, has considerable potential for competition with community colleges.

A very high proportion of the private trade schools in this country has been purchased by large corporations that are engaged in rationalizing advertising and recruitment procedures, adopting standard curriculums, and screening graduates for possible employment within the parent corporation. No one knows the extent to which this is occurring, but hardly a single such school has not received an offer of purchase, and many have been bought.

Schaefer and Kaufman report that a survey of 2,500 private vocational schools indicates that only 7 percent of them will accept persons who do not have a high school diploma (primarily barber and beautician colleges). Median length of program was 1 year, and median cost was over $600 to the student.

In view of the small proportion of schools accepting high school dropouts, this source of training is not likely to be an important factor at the secondary school level. It might well become even more important at the postsecondary level if the parent corporations decide to expand the schools rapidly to enhance their profits. At present, the corporate owners seem more interested in having them serve as a recruitment device for skilled manpower for themselves.

Education of Women

Until comparatively recently, secondary school occupational education for women has been confined almost exclusively to homemaking and clerical occupations. Today these two programs have two-thirds of the total enrollment in reimbursed secondary school vocational education, and perhaps 90 percent of the female enrollment. This has been somewhat reasonable, since most women become homemakers, and since 70 percent of the women high school graduates who do not go to college are employed as clerical workers. It has, however, provided very few opportunities for women to break out of these two rigid molds.

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[18] R. Stadt, "Man and Technology in Secondary School Curriculum," in *Journal of Industrial Teacher Education*, Vol. 6, No. 2, 1969, pp. 21–30.

The most rapidly expanding occupational programs for women at the secondary school level have been distributive education and home economics wage-earning occupations. Distributive education covers the occupations related to the distribution of goods and services. It enrolls some men, but women make up the bulk of its enrollment of over 100,000 students. Home economics wage-earning occupations cover a variety of fields, including child care, foods, and textiles. It covers both production and service occupations.

More and more women are enrolling, at the secondary school level, in occupational education courses which were at one time the exclusive province of men. Men are rarely welcomed into "women's" occupational courses, however.

Beyond question, the potential breadth of secondary school occupational education for women now exceeds that for men. As this is increasingly realized, it should further reduce the dropout rate for women and thus increase their rate of attendance in college. Once they get to college they are not likely to be satisfied with the typical woman's program.

Cooperative Work-Education

Over 200,000 high school juniors and seniors go to school half time and work half time on jobs approved by the school. The half time in school includes one class devoted to the theory of the occupation or business in which the student is employed. It is taught by the same person who visits the student on the job to see that he or she is learning and is not being exploited. This person, the coordinator, sometimes runs evening classes to teach the on-the-job trainers (certain fellow employees of the student) how better to teach the student.

This program goes under a variety of names: office occupations, distributive education, industrial cooperative, diversified occupations, etc., depending on the types of occupations which are taught in the programs. It has higher placement rates than other vocational programs, does not require large capital outlays, and keeps as up-to-date as the place of employment. Its principal disadvantages are its sensitivity to economic recessions, especially in large cities, and its inability to locate a suitable breadth of training stations in many rural areas.

The program grew in secondary school enrollment, according to Schill,[19] from zero in 1930 to 117,000 in 1965–66, and to 190,000 in 1967–68, according to Mangum. Some 2,500 or 14 percent of the 18,000 high schools had 4,800 such programs in 1965–66. The number is certainly higher now, but no one knows how much. The approximate age of students by program may be inferred from table 5, adapted from Schill.

It is clear that most students are high school seniors, and that the involvement of postsecondary education is minute. This table does not cover 4-year colleges. For some reason, they have been much more active in cooperative education than have the community colleges.

TABLE 5.—*Percentage of Part-time Cooperative Students by Program and by Grade Level*

	10th	11th	12th	Postsecondary
Distributive Education	0.2	15.9	79.3	4.6
Business/Office Occupations	0	8.1	90.4	1.5
Agriculture	0	21.3	78.7	0
Trade and Industrial	0.9	41.4	57.7	0
Diversified Occupations	0	26.2	73.8	0

Roughly half of the part-time cooperative enrollments are in distributive education. The total number of programs by States varied in 1965–66 from one in New Hampshire to 632 in Michigan. Eight States had half of the programs.

In addition to the part-time cooperative programs, a less adequate program called work-study or work-experience is provided for more than 45,000 high school students per year. Most of this employment is by the school and on the school grounds. It is designed to provide income to the student and to give the student the type of general education that employment provides. It is more successful in the former goal than the latter, since the employment is hardly typical. The part-time cooperative program relates both education and employment to the occupational goal of the student. Work-study does neither.

No reasons can be found for the failure of the community colleges, in particular, to avail themselves of the excellent methods of instruction provided by part-time cooperative education.

Coordinated Planning for Manpower Development Programs

Since passage of the Manpower Development and Training Act in 1962, the Federal Government has moved more and more strongly to emphasize its concern for development of the full potential of disadvantaged and handicapped persons. Because the unemployment rate is so extraordinarily high for disadvantaged and handicapped youth—higher than for the general population during the depths of the Depression—the first efforts were directed toward skill training for immediate employment. It was quickly found that basic educational deficiencies, primarily in reading, needed to be remedied simultaneously.

In its efforts to do something quickly to solve these serious problems, some 18 different Federal agencies set up a variety of competing and overlapping programs. Most of these have had little relationship with the formal school structure because (a) there was a general feeling that the schools had had their chance and had failed, (b) the formal school structure was not attractive to many of the potential trainees, and (c) most school people were not interested.

Soon there were so many programs, with different requirements, different benefits, and starting and stopping at such irregular intervals, that no one could possibly know where to send a person who needed help.

The first attempt to remedy this was the Coordinated Area

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[19] W. J. Schill, *Concurrent Work-Education.* Unpublished final report on USOE Project 6–2851.

Manpower Planning System (CAMPS). This brought the various agencies together to tell each what the others were doing. Unfortunately, most agencies chose not to tell what they were planning for fear some other agency would steal their plans. As a result, no comprehensive planning has been done. Instead, each agency has submitted a statement of what it is doing, and these statements have been put together in one document. This has been described graphically as "coordination by staple."

Schools in particular have not contributed or received much from CAMPS. They have been represented by State educational officials, or in the large cities, by central office staff. Most program planning and implementation, however, is done at the local educational agency level. These local people do not want State and central office staff speaking for them.

With the failure of CAMPS, decisions on the life and death of Federal manpower programs continue to be made in Washington, on grounds which appear to governors and mayors to be capricious. They are asking for control, and it appears likely that they will get it.

Governors and mayors are apt to be less tolerant than Washington bureaucrats of the failures of schools to help solve pressing problems of manpower development. Secondary schools which have high dropout rates and community colleges which have little or no remedial work, little or no vocational education, or that do not agree to accept students without high school diplomas, are likely to be particular targets.

Elimination of the General Curriculum

The general curriculum in the secondary school has so little to commend it that it is sure to disappear. Both the vocational and the college preparatory curriculums are expanding slowly, and this expansion comes at the expense of the general curriculum.

Elimination of the general curriculum will result in higher rates of college attendance, since it has by far the highest dropout rate of the present three high school curriculums, and has by far the lowest rate of college attendance by its graduates.

In the long run, the vocational and college preparatory curriculums should merge and form a single basic curriculum for the secondary school. Since high schools now require certain mathematics, physical science, and foreign language instruction that obviously is not needed by all citizens.

Single Secondary School Curriculum

Some interesting programs which could lead to a single secondary school curriculum are under way. These include the Industrial Arts Curriculum Project at Ohio State, the American Industries Project at Stout State University, the Enterprise program at Southern Illinois University, the Richmond, California Plan, the Ziel program at the University of Alberta, Project Feast of San Francisco State College, the requirement in a number of secondary schools that students develop a salable skill as a prerequisite to high school graduation, and action by most of the major national curriculum projects to revise their materials so that they will be usable by all students rather than just those who plan to go to college.

Many of these programs have as a goal the integration of knowledge about the world of work, occupational preparation, and the rest of general education. All have as a goal the preparation of all high school graduates for life outside the school, as well as for postsecondary specialization.

It is too early to predict the direction of the single curriculum which may result, but it is apparent that many people are working hard to bring it to reality.

IV. SUMMARY OF PROBABLE EFFECTS ON POSTSECONDARY EDUCATION

An increased demand for admission to postsecondary education is appearing, particularly for the community colleges. This will result from: redefinition of the goals of vocational education; broadened vocational education opportunities for women; further pressure for admission of students who do not have high school diplomas; and gradual elimination of the general curriculum, with its high secondary school dropout rate.

The demands for admission to postsecondary education will be minimized if: proposals for separate, parallel schools for vocational and for academic students are adopted; and private trade schools continue to expand.

Demand for broader vocational and technical offerings, particularly in the community college, will result from: pressure to postpone specific skill training until just prior to employment (this will not apply to lower-class youth if middle-class solutions to their problems are accepted); broadened secondary school vocational education opportunities for both men and women; demands for cooperative work-education programs in community colleges; and pressure by governors and mayors of large cities for involvement in manpower development programs. Basic education courses, especially in reading, will be pressed vigorously, as will vocational education programs.

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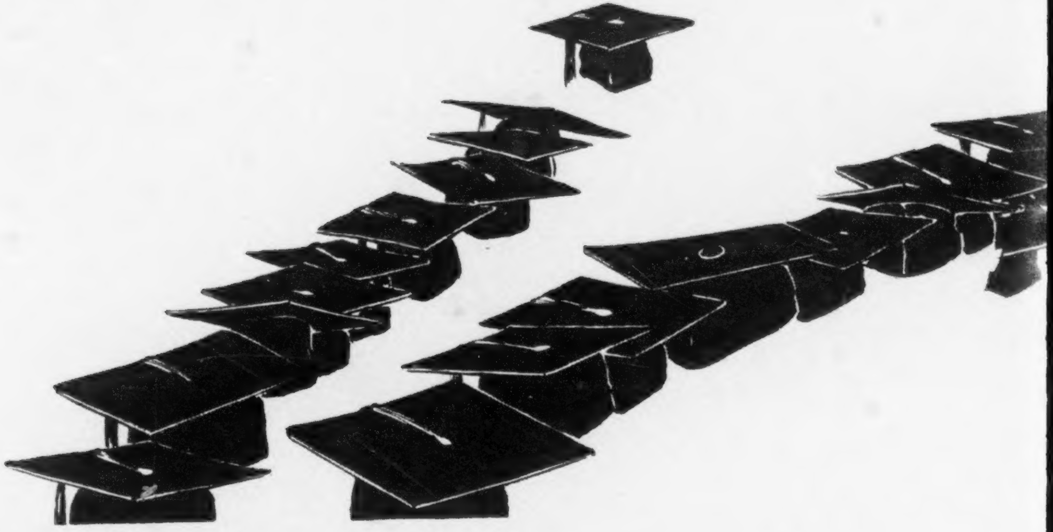

Part II.

PAPERS ON AREAS RELATING TO INSTITUTIONS

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The Financing of Higher Education: A Review of Historical Trends and Projections for 1975-76

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INTRODUCTION

Questions of adequate financing hold high priority among the vital issues confronting higher education today. As evidenced by the variety of proposed alternative strategies to deal with the financing of higher education, there is widespread concern among college administrators and others associated with higher education that colleges and universities are in the midst of a financial crisis. Although there is much debate about the nature of such a crisis and the ways to deal with it, there is still a need for careful historical analysis of financial data. The purpose of this study is to provide such an analysis for the recent past in order to clarify some of the major financial trends and to make some estimates as to future financial needs of colleges and universities.

It should be noted at the outset that the actual measurement of the financial condition of a college or university is extremely difficult. Unlike business and industry where easily calculated ratios such as earnings per share of stock serve to indicate success of a corporation, no such convenient measure describing the financial health of a college or university is available. Even the most traditional measure of financial stability—a balanced budget—does not necessarily reflect a sound financial condition for colleges and universities. As nonprofit organizations, institutions of higher education are characterized by a considerable interdependence between the income and expenditure sides of the budget. In other words, the rate of available income in large measure determines the level of expenditures, even if this means cutting back on important programs. Similarly, extreme pressures for increased expenditures may result in larger amounts of available income. For this reason, a college in financial difficulties may adjust institutional programs to suit available income and actually show a balanced budget.

As a result, financial pressures on the college budget reveal themselves in more subtle ways. The institution may not assume new obligations which should have been undertaken, or important programs may have been cut back which should have been maintained at present levels, or efforts to reach new standards of excellence which should be attained may have been abandoned. Obviously, these conditions contribute to the difficulties in analyzing the financial health of colleges and universities, and no attempt has been made to describe the effects of financial trends on institutional programs.

Also excluded from the scope of this study are discussions of policy issues and alternative strategies to deal with the financial conditions of higher education. However, it is important to recognize that demand for higher education and questions of priority in large measure determine the amount of resources available to higher education. Demands placed on higher education have steadily increased during the past and will surely continue to grow in the future. Each year a progressively larger proportion of high school graduates can be expected to seek admission to college. Critical manpower needs of a vastly expanding technological society must be met, and the continued expansion of the national economy is in large measure dependent on a new knowledge developed in colleges and universities. Undoubtedly, higher education will be asked, to a greater extent than ever before, to deal with the Nation's most pressing and difficult problems, such as improving the plight of the disadvantaged and improving the life in the urban areas through research and public service programs. In short, many see the expansion of higher education as essential to equalizing opportunity for all, to stimulate productivity and economic growth, to allow for complete use of social resources, and to support a potentially richer cultural and political life.

Of course, the growing expectations placed on higher education by both individuals and society entail an increasing financial burden for the institutions of higher education. Yet, the resources required to support continued growth are becoming more costly and more difficult to obtain. Colleges and universities must compete with other social and political priorities for a limited amount of money. While institutions of higher education must draw continuing support from both public and private sources, the continuing availability of these resources in the amounts that will be needed is dependent upon the ways in which the public perceives the function and usefulness of higher education. The availability of funds is also importantly dependent upon those who guide the decisionmaking processes at the Federal, State, and local levels, and at private institutions. It is important, therefore, to emphasize that it is through the processes of policy decision that many important sources of income are allocated to higher education. While many believe that such higher funding levels can and should be achieved in support of higher education, the competition of priorities and relative scarcity of resources imply no assurances that all financial needs will actually be met.

This study, then, concentrates primarily upon an analysis and review of financial trends in higher education from 1959–60 to 1966–67, and develops projections of expenditures for 1975–76. The discussion is organized by six major topics. The first section is an examination of the pattern of enrollment growth and the underlying population factors associated with that growth. Enrollment trends have had an especially important bearing upon the financing of higher education during this period. The second section attempts to provide an overall view of institutional income and expenditure trends. This examination of the amounts and rates of increase of total income and expenditure between 1959–60 and 1966–67 serves as a general background for the more specific and detailed analyses of income and expenditures. Section three begins this detailed analysis with an examination of traditional sources of income such as tuition and fees, Federal, State and local government grants, voluntary support, and endowment income. Section four represents an analysis of past expenditure patterns of institutions of higher education and, in addition, provides examination of the factors contributing to rising educational costs.

The analysis of historical trends provides the basis for the projections of enrollments and expenditures for 1975–76. Section five presents two expenditure projections based on different enrollment estimates. The projections are intended to indicate some measures of total need against which various proposed alternatives for future financing can be compared. These projections of expenditures, of course, do not in any way imply that available income will grow at corresponding rates. Section six concludes with some comments outlining the difficulties in projecting institutional income.

Finally, it should be noted that the analysis is primarily based on U.S. Office of Education data collected through the Higher Educational General Information and other surveys. The data base prepared for the study has been included in the appendix. Information in the appendix tables is presented by specific type of institution and by particular type of income and expenditure categories from 1959–60 to 1966–67. All text tables which are not specifically footnoted have been derived from the various appendix tables.

I. ENROLLMENT TRENDS

Any discussion of the financial needs of higher education must highlight the rapid increase in the number of students entering colleges and universities during the period 1959–67. Total enrollments increased from 3.7 million during 1959–60 to 6.4 million in 1966–67. Part of the increase is due, of course, to the heightened aspirations of many who, in an earlier time, might not have considered college or who would not have found the financial resources to attend. Yet, during this particular span of 8 years, the major factor influencing increased enrollment was the increase in the college-age population, reflecting the pronounced rise in birth rates in the years immediately following the end of World War II. Although the rate of increase for 18-year-olds had begun to rise rapidly as early as 1958, the largest concentration of that age group occurred within the 2-year period 1964 to 1966. Furthermore, the proportion of that age group graduating from high school and going on to college had also been increasing consistently during the 7 years from 1959–66. Thus, college enrollment trends reflected both sharp population increases and higher rates of attendance by high school graduates.

Rates of enrollment increases for all institutions for the period 1959–67 were 10.3 percent annually for the public institutions and 5.0 percent for private colleges and universities. The number of students attending all categories of public institutions increased at a faster rate than any of the private colleges. Thus, at the beginning of the period, public colleges enrolled 60.0 percent of the total student population while, by 1967, their share of total enrollment had increased to 68.0 percent. The major factor in the rapid growth of the public segment was the very large increase in the number of students attending 2-year colleges.

During the past decade, population trends have been a major factor contributing to rising enrollment. However, for the immediate future, population increases will place less pressure on college enrollments as the number of 18-year-olds are actually projected to increase at lower rates than they have in the past. The very high birth rates of the immediate postwar years were followed by smaller increases during the 1950's and by actual declines in birth rates beginning about 1961. On this basis the lower rate of population growth, when considered as a single factor, would have a depressing effect on future enrollment levels. It follows that maintenance of enrollment increases consistent with historical trends would have to be largely dependent on the continuous increase of college entrance rates by high school graduates.

II. INSTITUTIONAL INCOME AND EXPENDITURE TRENDS

The enrollment of ever larger numbers of students has been accompanied by rapidly increasing expenditures. The magnitude of the growth during the recent past is revealed by the fact that institutional expenditures increased at an average annual rate of 15.3 percent as compared to a 14.6 percent growth rate for total institutional income. It should be noted, of course, that a comparison of income and expenditure growth rates does not necessarily reflect financial pressures, as most institutions often must tailor expenditures to available income. Yet, a review of past growth rates does reveal some imbalances between income and expenditures which are important to note. In addition, the rapid pace of expenditure increase has caused concern among college administrators and others that the level of income necessary to support needed expansion or improvement cannot be adequately met if current patterns of financing higher education continue unchanged.

As table 1 indicates, total institutional expenditures nearly tripled between 1959 and 1967, increasing from $6.8 to $18.5 billion. In comparison, total institutional income increased at somewhat slower rates, and by 1966–67 expenditures nearly equaled income.

TABLE 1.—*Total Institutional Income and Expenditures*
(Amounts and Average Annual Rate of Increase)
1959-60 and 1966-67

	1959–60	1966–67	Average Annual Rate of Increase
INCOME			
Total Institutional Income, Including Loans			
Amount in millions of dollars	$7.1	$18.5	14.6
Total Current-Fund Income	($5.8)	($14.6)	14.1
Total Plant-Fund Income	($1.3)	($3.9)	16.9
EXPENDITURES			
Total Institutional Expenditures (millions)	$6.8	$18.5	15.3
Total Current-Fund Expenditures	($5.6)	($14.3)	14.3
Total Plant-Fund Expenditures	($1.2)	($4.2)	19.7

Examining the growth rates, table 1 shows that current-fund income and expenditures increased at almost equal annual rates, 14.1 and 14.3 percent respectively. The general imbalance between total income and expenditure trends can be largely explained by the very high average annual rate of construction expenditures (19.7 percent) caused by the rapidly rising enrollments during these years. In comparison, receipts for capital outlay had only risen at an average annual rate of 16.9 percent. The revenues for capital improvement purposes had increased at a lower rate despite the fact that loans constituted an ever larger proportion of total plant-fund receipts. During 1959–60, loans constituted about 30 percent of total plant-fund income. By 1966–67, the proportionate share of loans had increased to nearly 49 percent.

In summary, while a comparison between income and expenditure growth rates is not a definitive indicator of financial pressures, the data nevertheless show that between 1959–60 and 1966–67 total institutional expenditures have increased at a higher rate than institutional income. The principal reason for these trends is the significantly lower rate of increase of plant-fund income which, despite increased reliance on borrowing, has not kept pace with the higher rate of plant-fund expenditures. In the future, enrollments are projected to increase at lower rates than they have during the past. Assuming that past financial trends will continue in the future and assuming that enrollments actually follow current projections, it appears likely that the rate of increase for plant-fund expenditures would be more in line with the rate of increase for plant-fund income. At the same time, however, if enrollments are significantly above projections, then it seems equally as likely that plant-fund expenditures will continue to place heavy financial pressures on institutional budgets.

III. EXAMINATION OF TRADITIONAL SOURCES OF INSTITUTIONAL INCOME

The purpose of this section is to review past performance of traditional sources of income such as Federal, State, local and private support, as well as income from tuition and fees. Special attention will be given to an examination of the different patterns of financing between public and private institutions as well as the changing mix of institutional income over a period of time. The basic institutional income trends are illustrated in the following table which shows the various sources of revenues as a percentage of total institutional income for 1959–60 and 1966–67.

Table 2 shows that public colleges and universities derive a major part of their income from State and local government appropriations, while income from tuition and fees constitutes a relatively small proportion of total income.

Private institutions, in comparison, depend on tuition and fees income to a far greater extent and, compared to public colleges, receive a significantly larger income from private grants and earnings from endowment funds. For both public and private institutions, Federal support is an important source of income. However, Federal assistance makes up a considerably larger portion of the total revenue of private institutions than of public institutions' budgets.

The data in the table also indicate that the period between 1959 and 1966 was one of important shifts in the proportion

TABLE 2.—*Major Sources of Income as a Percentage of Total Current- and Plant-Fund Revenues Excluding Loans, by Type of Institution*
(1959-60 and 1966-67)

Source of Income	Public Institutions		Private Institutions		All Institutions	
	1959–60	1966–67	1959–60	1966–67	1959–60	1966–67
Tuition and Fees	8.6	10.0	28.9	29.7	17.3	17.9
Federal Government	15.5	17.9	17.5	23.5	16.4	20.1
(Research)	(9.4)	(9.8)	(16.2)	(18.6)	(12.3)	(13.3)
(Other)	(6.1)	(8.1)	(1.3)	(4.9)	(4.1)	(6.8)
State Governments	43.1	39.3	1.5	1.5	25.3	24.2
Local Governments	4.8	5.1	.2	.4	2.8	3.2
Private Gifts and Grants	2.7	2.4	16.5	13.2	8.6	6.7
Endowment Income	.5	.3	6.5	4.4	3.1	2.0
All Other Income	24.8	25.0	28.9	27.3	26.5	25.9
Total, All Sources	100.0	100.0	100.0	100.0	100.0	100.0

of total income received from traditional sources of support. Despite significant increases in the dollar amounts contributed by each source, it is also a fact that proportionately to total income, State support, private gifts and grants, and endowment income have been declining. In addition, support from local governments has also declined proportionately each year with the exception of 1966–67. In comparison, income from tuition and fees and Federal support have increased as a proportion of institutional budgets during these years. In the discussion that follows, each of these sources of financial support will be reviewed individually.

Tuition and Fees

Revenue from tuition and fees is that portion of income derived directly from the student or his family. For the institution it may be a somewhat flexible source of income inasmuch as tuition charges may be raised to compensate for rising costs and to balance increasing expenditures. Total institutional income from tuition increased from $1.2 billion in 1959–60 to nearly $3.0 billion in 1966–67. This increase reflects, of course, both the rapidly rising enrollments of that period and increased student charges. The following table shows average annual rates of increase for tuition income between 1959 and 1966 for public and private institutions as compared with rates of increase in total income for such institutions.

TABLE 3.—*Comparison of Annual Growth Rates Between Total Institutional Receipts, and Tuition and Fees Revenues, by Type of Institution*

(1959-60 to 1966-67)

Income	Average Annual Rate of Increase	
	Public Institutions	Private Institutions
Total Income Excluding Loans	14.5	12.9
Tuition and Fees Income	17.0	13.3

For both public and private institutions, tuition and fee income has increased more rapidly than total income from all sources. However, public colleges and universities have increased their tuition income at an even faster pace than private institutions. During this period, enrollment at public institutions was increasing about twice as fast as private enrollments. This had the effect of increasing total tuition income at a faster rate for public institutions even though, as will be indicated later, individual student charges increased more rapidly at private colleges and universities. The high growth rate for tuition income is also reflected in institutional budgets. Between 1959 and 1966 the proportion of total income represented by tuition and fees had increased from 8.6 to 10.0 percent for public colleges and from 28.9 to 29.7 percent for private institutions.

In order to show the impact of increasing student charges alone, the following table has been developed showing the average per student income and annual rates of increase.

TABLE 4.—*Estimated Average Tuition and Fees Income per FTE Student, by Type of Institution and Annual Rate of Increase*

(1959-60 and 1966-67)

	1959–60	1966–67	Average Annual Rate of Increase	Percent Increase 1959–60 to 1966–67
Public Institutions	$196	$ 291	5.8	48.5
Private Institutions	727	1,178	7.1	62.0
Dollar Differential Between Public and Private Institutions	531	887		

This table shows that tuition charges have been rising more rapidly at private than at public institutions. However, it should also be noted that during more recent years, State budgetary pressures are causing public institutions to raise tuition charges at a rate faster than that indicated in table 4 for the 1959–1966 period.[1] The high rate of increase of tuition charges at private institutions is further reflected by the difference, in dollar amounts, between the tuition charges of public and private institutions. Reference to table 4 shows that in 1959–60 the tuition cost differential between the public college or university and the more expensive private institution was $531. By 1966–67 not only were both public and private tuition levels 49 percent and 62 percent higher, respectively, but the cost differential had risen to $887 from $531. Since income from tuition and fees represents the largest single source of revenue for most types of private institutions, it is reasonable to infer that the tuition differential between public and private institutions will continue to increase.

The rapid increase in per student charges shifts an increased share of the cost to the student. Because it is income drawn from the earnings, assets, or borrowing of individuals, the growth of tuition and fees income might be expected to be roughly proportional to those increasing earnings. The best general measure of the individual growth of earnings is that of per capita personal disposable income. Between 1959 and 1966, the per capita income advanced at 4.5 percent annually,[2] while tuition charges at public and private institutions increased 5.8 and 7.1 percent respectively. Clearly, both public and private per student income from tuition and fees has risen at rates higher than that of per capita personal disposable income. These findings suggest that sending a child to college results in a progressively heavier financial burden to the parent.

The conclusions to be drawn from these data have an important bearing on both student and institutional aid. Tuition income at both categories of institution, public and private, is growing faster than total institutional income. In addition, per student charges have risen faster than personal disposable income. Public institutions, which have experienced the most rapid enrollment growth, had been raising tuitions at a rate slower than that of private colleges and universities, although this trend may have changed in recent years. Private institutions, which have had a slower rate of enrollment growth, had been raising tuitions more rapidly. The dollar differential has been increasing to the point where, in 1966–67, attendance at a private institution cost a student, on average, $887 more than if he had attended a public college or university. These averages disguise, of course, individual tuition differences between different types of institutions. Yet, they are instructive in revealing general trends in tuition income.

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[1] For many institutions, of course, increased tuitions have meant less of a net increase in general funds because larger and larger fractions of each additional dollar of tuition income have to be channeled back into student aid in order to meet commitments to equal opportunity. For a further discussion of this issue, see *The Economics of the Major Private Universities*, William G. Bowen, 1968.

[2] Derived from the *Economic Report of the President*, Council of Economic Advisors, January 1969, p. 245.

State Support to Higher Education

States have historically been the primary contributor to public institutions of higher education, and State tax funds will undoubtedly continue to play a vital role in the financing of higher education. In fact, during the past, States have steadily increased their efforts to support higher education by allocating larger shares of their budgets to colleges and universities. During 1959–60, the States appropriated about $1.7 billion to higher education, which constituted 9.5 percent of total State tax revenues. By 1966–67, State appropriations had risen to over $4 billion or 12.6 percent of total State tax revenue.

State effort can further be illustrated by comparing the average annual rate of increase of educational appropriations to that of tax income. State appropriations increased at a rate of 13.0 percent per year, whereas State tax income only rose at a rate of 8.5 percent per year, increasing from $18.0 billion in 1959–60 to $31.9 billion in 1966–67. Obviously, this trend will vary widely for individual States. However, on the average, it seems clear that relative to available income States have definitely increased their efforts in the support of higher education.

Despite the considerable efforts of States to increase their support to higher education, the rate of increase of State support has not kept pace with the rate for institutional income. In comparing the average annual rate of increase for total institutional income, excluding loans, for all public institutions with total State support for public institutions, the total income increased at an average rate of 14.5 percent, as compared to 13.0 percent for State support. One exception to this trend is the 2-year public colleges for which State support has increased at an average annual rate of 24.6 percent as compared to a 22.3 percent rate for total public 2-year college revenues, excluding loans. This finding tends to underscore the fact that 2-year institutions are assuming an increasingly important role within total statewide educational systems and State plans for higher education.

The proportionate decline of State support can be further demonstrated by calculating the share which State support constitutes of total institutional income for public colleges. During 1959–60, State support constituted 43.1 percent of total income for public institutions. By 1966–67, the State share of total institutional income had declined to 39.3 percent. However, for public 2-year colleges, the trend is reversed. State support increased from 28.7 percent of total income for public 2-year colleges in 1959–60 to 32.9 percent of total income in 1966–67.

On the basis of these findings, it can be concluded that, relative to total tax income, the various States have significantly increased their efforts in the financial support of public colleges and universities, resulting in ever larger appropriations each year. At the same time, relative to total income of public institutions, State support is falling behind. In other words, while State support to higher education is becoming an increasingly larger part of the States' budgets, State assistance, with the exception of public 2-year colleges, is nevertheless constituting a continuously smaller part of institutional budgets.

Local Government Support to Higher Education

Local support to higher education has increased at an average rate of 15.9 percent, rising from $188 million in 1959–60 to $529 million in 1966–67. However, this high rate of increase is somewhat misleading since local support had its highest absolute increase between 1965–66 and 1966–67, rising by $130 million from $399 to $529 million, or nearly 33 percent. Prior to 1966–67, the average annual rate of increase for local support was some 13 percent annually.

Local government support constitutes a very small proportion of total income for all types of institutions except public 2-year colleges. During 1959–60, public 2-year colleges received nearly 63 percent of the total local government appropriations to higher education and by 1966–67 this share had increased to almost 75 percent. Despite these increased allocations, however, local support as a proportion of total income for 2-year colleges had declined from 43.5 percent in 1959–60 to 34.2 percent in 1965–66, but during 1966–67 the proportionate share had increased to 35.8 percent.

In summary, public 2-year colleges are the principal recipients of local governments' support to higher education. Despite high annual rates of increase, local support made up a declining proportion of total income for 2-year colleges. However, during 1966–67 the proportionate share of local support had increased over the previous year. It remains to be seen whether this finding is indicative of any new future trends.

Federal Support to Higher Education

The Morrill Act of 1862, which provided for the establishment of land-grant colleges, marked the first systematic Federal support of higher education. Since that time, Federal aid to higher education has increased substantially. Especially during the past decade, the Federal Government has assumed a strong role in the financing of higher education with the passage of significant legislation, such as the National Defense Education Act of 1958, the Higher Education Facilities Act of 1963, the Higher Education Act of 1965, and the Higher Education Amendments of 1967 and 1968.

Total Federal support to higher education increased from $1.1 billion in 1959–60 to more than $3.3 billion in 1966–67. As expected, research support constitutes by far the largest share of Federal aid. However, when taking research support as a percent of total Federal aid, the proportionate share for research has declined from 75.2 percent in 1959–60 to 66.2 percent in 1966–67, even though actual allocations for research have increased each year. In comparison, the proportionate

TABLE 5.—*Percentage Distribution of Total Federal Support by Type of Institution*

(1959-60 and 1966-67)

Type of Federal Support	1959–60			1966–67		
	Public Institutions	Private Institutions	All Institutions	Public Institutions	Private Institutions	All Institutions
Research	33.0	42.2	75.2	29.0	37.2	66.2
Other Educational and General	16.9	2.7	19.6	18.3	6.9	25.2
Capital Improvement	4.4	.8	5.2	5.7	2.9	8.6
Total Federal Support	54.3	45.7	100.0	53.0	47.0	100.0

TABLE 6.—*Percentage Distribution of Federal and Other Institutional Income by Type of Institutions*

(1959-60 and 1966-67)

Sources of Support	Public Institutions		Private Institutions		All Institutions	
	1959–60	1966–67	1959–60	1966–67	1959–60	1966–67
Total Federal Support	15.5	17.9	17.5	23.5	16.4	20.1
Federal Research Support	(9.4)	(9.8)	(16.2)	(18.6)	(12.3)	(13.3)
All Other Support, Excluding Loans	84.5	82.1	82.5	76.5	83.6	79.9
Total Revenues	100.0	100.0	100.0	100.0	100.0	100.0

share of Federal aid for other educational and general purposes has risen substantially, increasing from 19.6 percent in 1959–60 to 25.2 percent in 1966–67. Federal construction support, of course, significantly increased during 1965–66 when the funds obligated under the Higher Education Facilities Act reached their peak. However, by 1966–67 Federal support for construction actually declined, constituting only 8.6 percent of total Federal aid.

Table 5 shows the proportionate distribution of total Federal aid by type of institution in 1959–60 and 1966–67.

As evident from this table, private institutions have done remarkably well in obtaining Federal support. Private colleges and universities were able to increase their share of total Federal support from 45.7 percent in 1959–60 to 47.0 percent in 1966–67, despite the fact that they enrolled a declining proportion of total students. This trend is explained in large measure by the fact that private institutions have received well over half of the total Federal research support, with most of those funds going to private universities. In this regard, it is of importance to note that most Federal research money differs from other forms of Federal support in that it goes for particular research projects and cannot be used to meet general operating costs. Although private colleges have made significant improvements in obtaining a greater share of the Federal nonresearch support between 1959 and 1967, public institutions clearly receive the largest share of the nonresearch Federal funds.[3]

As in the case of State support, Federal aid to higher education has also risen at higher rates than Federal income. During 1959–60, total Federal aid to higher education amounted to some $1.1 billion, which constituted 1.5 percent of total Federal receipts excluding trust funds as defined by the National Income Accounts Budget. By 1966–67, total Federal support had increased to over $3.3 billion, or 3.0 percent of Federal receipts. In terms of average rates of increase, Federal receipts rose at an approximate rate of 5.8 percent annually, expanding from nearly $76 billion in 1959–60 to almost $112 billion in 1966–67. In comparison, during the same period Federal support to higher education increased at an average rate of 17.2 percent. Clearly, relative to Federal receipts, Federal support to colleges and universities has risen at higher rates. Furthermore, the average annual rate of increase of Federal support is also considerably higher than the annual rates of increase of total institutional income, excluding loans (17.2 and 13.8 percent respectively).

The rapid rise of Federal support is, of course, reflected by the increasing proportion which Federal funds constitute of institutional budgets. As indicated by table 6, Federal support has increased substantially for all types of institutions.

Table 6 shows that Federal support for all institutions constituted 16.4 percent of total institutional income in 1959–60 and by 1966–67 the Federal share had increased to 20.1 percent. Clearly, Federal research monies constitute by far the largest share of Federal aid for most types of institutions, and in particular private colleges. During 1966–67, for example, Federal research funds made up more than three-fourths of total Federal aid to private colleges, and constituted nearly one-fifth of the total income for private institutions. Considering total Federal assistance, the Federal share constitutes a higher proportion of private than of public institutional budgets, and this public-private difference was even more pronounced in 1966–67 than during earlier years. Although the overall trends show a heavy reliance on Federal support of private institutions, it is of significance to note that Federal aid, when taken as a percent of total income of other private 4-year colleges, has declined from 19.3 percent in 1963–64 to 17.6 percent in 1965–66, and to 14.2 percent in 1966–67. In comparison, during 1966–67 Federal funds constituted the largest single source of revenues for private universities, making up 33.8 percent of total income.

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[3] For a further discussion on distribution of Federal funds, see *Federal Support to Universities and Colleges, Fiscal Year 1967*, National Science Foundation, 1968.

From the analysis of historical trends, the importance of Federal support as a major source of income is evident. Federal assistance has increased at a higher rate both in terms of Federal income and in terms of institutional income. At the same time, it should be noted that in light of the stringent budget conditions during recent years, it seems reasonable to assume that since 1966–67 Federal support has increased at a considerably slower pace than in prior years. This condition undoubtedly has contributed to the financial anxieties expressed by many colleges and universities, especially private institutions.

Voluntary Support to Higher Education

Private gifts and grants have traditionally provided an important source of income for higher education, especially for private colleges and universities. According to Office of Education data, private gifts and grants increased from $789 million in 1959–60 to nearly $1.47 billion in 1966–67. Colleges and universities receive voluntary support from a variety of sources. During 1966–67, the relative shares contributed to higher education by the major groups of donors were as follows:

TABLE 7.—*Distribution of Total Voluntary Support By Source* (1966-67) *

Source	Percent of Total
Non-alumni Individuals	25.2
General Welfare Foundations	22.8
Alumni	21.9
Business Corporations	16.8
Religious Denominations	7.2
All Other Sources	6.1
Total	100.0

*Council for Financial Aid to Education, *Voluntary Support of Education 1967-68*. 1969, p. 6. For a more detailed discussion of historical trends of voluntary support, the reader is referred to this and other CFAE publications.

Although the proportionate share for each donor fluctuates from year to year, the 1966–67 distribution is fairly representative of the relative shares contributed by various sources during past years.

As expected, private institutions are receiving by far the largest share of total voluntary contributions to higher education. However, as indicated by table 8, the proportionate share of voluntary support for private institutions has declined from 84.3 percent in 1959–60 to 80.3 percent in 1966–67. Public institutions, of course, show a corresponding increase from 15.7 percent to 19.7 percent during the same period.

TABLE 8.—*Distribution of Voluntary Support by Type of Institution* (1959-60 and 1966-67)

	1959–60	1966–67
Public Institutions	15.7	19.7
Private Institutions	84.3	80.3
Total Voluntary Support	100.0	100.0

The proportionate decrease among private institutions is particularly pronounced for the other private 4-year colleges whose share of total voluntary support has decreased from 49.5 percent in 1963–64 to 41.5 percent in 1966–67. In comparison, the proportionate share for private universities has increased from 32.0 percent to 36.1 percent during the same period.

These findings suggest two important trends. First, private schools are facing increasing competition for funds from public institutions, more and more of which are seeking voluntary funds to supplement State appropriations. Second, among private institutions, the universities seem to have especially intensified their efforts to solicit a greater response from available sources of voluntary support. The other 4-year private colleges seem to experience the major impact of these trends. Despite the fact that the total amount of voluntary support has increased each year for these colleges, their proportionate share of total voluntary support is steadily declining. This conclusion is further underscored by the fact that the average annual rate of increase for voluntary receipts of other 4-year private colleges has been 7.4 percent, lowest for all types of colleges. The average rates of increase also reflect the increasing competitiveness for voluntary support of public colleges and universities. In every case, the average rate of increase for public colleges has been higher than the average rate for any of the private colleges.

Total voluntary support for all institutions has increased at an average rate of 9.3 percent annually. However, when compared to total institutional income, the average rates of increase of voluntary support are clearly lower than the average rates of increase for institutional income. This trend is further reflected by the fact that voluntary support, with some exceptions, tends to make up a declining share of total institutional income. For all institutions, private gifts and grants constituted 8.6 percent of total current and plant-fund income in 1959–60.[4] By 1966–67, the proportionate share had decreased to 6.7 percent. For public institutions, voluntary support constitutes a small, but relatively constant, share of total institutional income. In contrast, the proportionate share of voluntary support for all private institutions has dropped from 16.5 percent in 1959–60 to 13.2 percent in 1966–67. There are no exceptions to this trend for the various types of private institutions.

Earnings from Endowment Funds

Endowment funds and earnings have grown substantially during past years. The book value of total endowment funds during 1959–60 was valued at over $5.3 billion and earnings for educational and general purposes amounted to some $207 million. During 1966–67, the book value of endowment funds was reported to be over $9.0 billion (nearly $11.9 billion at market value) and earnings for education and general purposes exceeded $328 million.[5] Of the total endowment earnings, private institutions receive over 90 percent with the remainder going to public colleges, principally public universities.

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[4] It should be noted that the calculation of voluntary support as a proportion of total institutional income includes only gifts and grants to current and plant funds. This constitutes approximately 75 percent of total receipts from private sources. The remainder is contributed to other institutional funds, principally endowment funds. Other statistics, of course, are based on total private contributions.

Despite the increasing dollar amounts earned each year, when viewed in terms of average annual increases, total endowment earnings rose at an annual rate of 6.8 percent, lowest for all sources of income discussed in this study. As a result of the low increase relative to total income, endowment earnings also constitute a declining proportion of institutional budgets. During 1966–67, endowment earnings constituted only 2.0 percent of total income for all institutions, a decrease from 3.1 percent seven years earlier. Among public institutions, endowment earnings as a percent of total income have been declining steadily and by 1966–67 constituted only .3 percent of total income. In comparison, the proportionate share of endowment earnings to total income for private colleges has decreased from 6.5 percent to 4.4 percent.

In summary, endowment income with a few exceptions represents only a small portion of institutional budgets for the large majority of colleges and universities. Moreover, endowment earnings have risen at comparatively low rates and, as a result, constitute a declining share of total institutional income.

Other Sources of Income

In addition to the income sources already discussed, institutions obtain revenues from a variety of additional sources, principal among which is income from auxiliary enterprises and revenues derived from various service activities of educational departments and hospitals. No special analysis of these income sources has been made. However, it should be pointed out that, on the average, the "other" institutional revenues make up between 25 and 26 percent of total income for all institutions, although for individual types of institutions the proportionate share for these income sources varies somewhat. In addition, despite some variations, the proportionate share for these income sources in general remained relatively constant during the 7-year period for each type of institution. In other words, the rate of increase for the "other" institutional income has been roughly similar to the rates of increase for total institutional income.

In conclusion, the period between 1959–60 and 1966–67 was one of marked expansion for higher education. During this time, enrollments nearly doubled and expenditures nearly tripled. As the demands on higher education increased, the need for additional revenues rose at higher rates than the contributions to higher education by several major sources of income. As a result, significant shifts in the mix of institutional income occurred. As has been shown by the foregoing analysis of institutional income trends, State support, private gifts and grants, and endowment earnings have increased in actual dollar amounts each year. Yet, relative to total institutional income, they were falling behind. Only income from tuition and fees, and Federal support have shown proportional increases. The high rate of increase of local government support is principally due to the very large appropriations during 1966–67. These income trends are summarized in table 9, which compares the average annual rates of increase for traditional sources of income with total institutional income excluding loans.

TABLE 9.—*Average Annual Rates of Increase For Traditional Sources of Income and Total Institutional Income Excluding Loans 1959-60 to 1966-67*

Income	Public Institutions	Private Institutions	All Institutions
Total Income, Excluding Loans	14.5	12.9	13.8
Tuition and Fees	17.0	13.3	14.4
Federal Support	16.8	17.7	17.2
Local Government Support	15.5	28.9	15.9
State Support	13.0	13.3	13.0
Voluntary Support	12.9	8.6	9.3
Endowment Earnings	6.9	6.8	6.8

In addition, both public and private colleges are feeling the effects of the relatively slower growth rates of some traditional sources of income. For the public institutions, except 2-year colleges, it is of major significance that State support which constitutes by far the largest share of their budgets has increased at slower rates relative to total income. For private colleges, both voluntary support and endowment earnings have risen at significantly lower rates than total income. Moreover, among private colleges, it appears that the 4-year and 2-year colleges are most directly affected by these trends as income from tuition and fees constitutes a progressively larger proportion of their total income. Assuming that past income trends will remain unchanged, the implications for the financing of higher education are clear. Excepting dramatic increases for private and State support, colleges and universities will continue to shift a larger share of their costs to the student by way of increased tuition and fees, and/or Federal support will assume a progressively larger share of total institutional income.

IV. EXAMINATION OF EXPENDITURE PATTERNS AND EDUCATIONAL COSTS

Turning now from the analysis of historical income trends, this section reviews institutional expenditure patterns and factors contributing to rising educational costs. The discussion of expenditure patterns will give attention to the proportionate allocation of funds to various expenditure categories and examine differences by type of institutions as well as changes over time. Since rising expenditures are only partially a function of expanding enrollments, the major factors contributing to increased costs and their implications for institutional financing are also reviewed.

Institutional Expenditure Patterns

As noted earlier, total institutional expenditures increased from $6.8 billion in 1959–60 to $18.5 billion in 1966–67, rising at 15.3 percent annually. These expenditures have been increasing slightly faster than total income. Taken as a percent of gross national product, expenditures for higher education comprised 1.4 percent of the 1960 GNP and by 1967 such expenditures were 2.3 percent of a greatly increased GNP.

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[5] It should be noted that total earnings from endowment funds have not been consistently identified by Office of Education surveys. For this reason, this discussion of endowment income is based on earnings allocated for educational and general purposes, which represent by far the largest share of endowment income. For further explanation, see the Technical Appendix.

Table 10 shows the distribution of expenditures by function for all institutions between 1959–60 and 1966–67.

TABLE 10.—*Percentage Distribution of Total Expenditures by Category: All Institutions of Higher Education*

Expenditure Category	1959–60	1966–67
Educational and General	66.5	61.7
(Organized Research)	(15.0)	(13.6)
Plant-Fund Expenditures	17.5	22.7
All Other Expenditures	16.0	15.6
Total	100.0	100.0

These data show that nearly two-thirds of all expenditures are dispersed for educational and general purposes. The proportionate share for research, which is included in the educational and general category, has declined somewhat even though research expenditures are increasing each year in actual dollar amounts. The overall proportionate decline in educational and general expenditures is largely a function of the increasing plant-fund expenditures resulting from the high enrollment increases during the middle 1960's. The expenditures for all other purposes, of which auxiliary enterprises constitute the largest share, have remained constant at about 16 percent of total expenditures.

Differences between public and private institutions follow expected trends. Relative to private colleges, public institutions expend a somewhat lower proportion of their funds for educational and general purposes and for research. However, for plant-fund expenditures, the trends are reversed. Since public institutions have accommodated by far the largest share of annual enrollment increases, expenditures for capital outlay constitute a larger portion in the budgets of public colleges than for private institutions.

In order to examine the expenditure patterns for the various types of educational and general expenditures, a table has been constructed showing the proportion which expenditures for administration, instruction, extension services, libraries, plant operation and maintenance, and other expenditures constitute of total educational and general expenditures *excluding* organized research.

Despite the fact that the proportionate share for each expenditure category changes slightly between 1959 and 1966, it can be concluded that, in general, the proportionate outlays for the various expenditure categories relative to total educational and general expenditures excluding research have remained remarkably constant between 1959–60 and 1966–67.[6]

TABLE 11.—*Percentage Distribution of Expenditures for Educational and General Purposes,* excluding *Research, All Institutions of Higher Education*

Expenditure Category	1959–60	1966–67
General Administration and General Expense	16.7	16.4
Instruction and Departmental Research	51.4	49.3
Extension and Public Service	5.9	5.5
Libraries	3.9	4.7
Plant Operation and Maintenance	13.5	10.9
All other Educational and General	8.6	13.2
Total	100.0	100.0

However, even though expenditures for the various categories have remained relatively constant over time, considerable differences emerge when comparing the proportionate expenditures for similar purposes among different types of institutions. Expenditures for administration and general expense are a particular case in point. Although during 1966–67 expenditures for administration for all institutions constituted only 16.4 percent of total educational and general expenditures excluding research, the comparative percentages for private other 4-year colleges and 2-year colleges which are predominately of small enrollment size were 25.8 and 32.7 respectively. In comparison, the relative share of administrative expenditures for the other types of institutions is much closer to the 16.4 percent average for all institutions. Despite the fact that private colleges tend to provide more services of an administrative nature for their students than public institutions, the much higher proportionate expenditures for the private 4-year and 2-year colleges strongly suggest the operation of an economy of scale principle, i.e., the size of a college is inversely related to the amount expended for administration.[7]

The high administrative costs for the private 4-year and 2-year colleges have the additional implication that those colleges find themselves spending proportionately less of the educational and general budget for instruction and departmental research than do their public counterparts. For example, during 1966–67 public 2-year colleges spent 61.5 percent of their educational and general funds, excluding organized research, for instruction while private 2-year colleges only allocated 42.8 percent. Similarly, the comparable statistics for public and private 4-year institutions are 55.0 percent and 46.7 percent respectively. Only for universities are these trends reversed. During 1966–67 public universities expended 46.2 percent of educational and general funds, excluding organized research, for instruction and departmental research as compared to 48.3 percent for private universities. The underlying variable associated with these expenditure trends is school size. On the average, public 2- and 4-year colleges are of considerably larger enrollment size than private colleges. Only for universities is this public-private difference less pronounced.[8]

The effects of higher administrative costs can be further illustrated by computing expenditures on a per student basis. While all private institutions still have substantially higher per student expenditures than public colleges for total educational and general purposes excluding research, the per student expenditures for instruction and departmental research reveal some striking similarities between public and private institutions. During 1966–67, the per student expenditures for instruction were essentially the same for public and private 4-year colleges ($750 and $758, respectively). Even more significant is the fact that during 1966–67 public 2-year colleges have spent $534 per student as compared to only $464 for their private counterparts. Only private universities expended far more per student in comparison to public universities ($1,357 and $1,040, respectively). Obviously, these averages disguise the wide range of expenditure differences for individual institutions, and the per student expenditures, particularly for many private colleges, are considerably higher than the averages for the total group would suggest. Nevertheless, it must be concluded that the large majority of private 4-year and 2-year colleges, caught between rising costs, relying on tuition as the major source of income, and carrying disproportionately high expenditures for administration, are finding themselves in an increasingly difficult competitive position relative to their public counterparts.

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[6] It should be noted that the proportionate decline for instruction and departmental research in 1967 seems to be primarily a data problem. For the last 2 years, some expenditures formerly reported under instruction and departmental research have now been reported under another category included in all other educational and general expenditures. For further explanation, see the Technical Appendix.

[7] It should be noted that school size may also be an important dimension of the type and quality of education that is offered. In other words, the kind of education provided may also differ by school size, and allocations of resources to various expenditure categories may also differ for this reason. Although college budgets are undoubtedly designed to reflect the educational objectives of the school, the data nevertheless strongly suggest that other factors such as size of the organization also influence the way funds are expended.

[8] U.S. Office of Education, *Digest of Educational Statistics, 1969*. Washington, D.C.: 1969, p. 76, Table 108.

Factors Contributing to Rising Costs

A great variety of factors contribute to increasing educational costs. The most obvious of these is faculty salaries. Since salaries comprise the largest proportion of the expenditures for instruction, their historical trends are of great importance for college budgets. According to a 1967–68 study by the American Association of University Professors, the annual percentage increases for all ranks ranged from a low of 5.0 percent in 1963 to a high of 7.4 percent in 1967–68. The average increase for all ranks during the period from 1960–61 to 1967–68 was between 6 and 7 percent annually. For professors and associate professors the rate of increase was even somewhat higher than the combined average for all ranks. These rates of increase in faculty salaries include the influence of inflation, which had averaged about 2 percent in the years from 1959 through 1967 and which has been accelerating since then. It is apparent, however, that there have been significant differences in rates of increase for faculty salaries between public and private institutions. Although salary levels are generally lower at public institutions, the rate at which these salaries have increased has been higher. For example, the average compensation for full professors at public liberal arts colleges rose 8.6 percent between 1966–67 and 1967–68, while at private liberal arts colleges the increase for the same period was only 6.7 percent.[9] These different rates of increase between public and private institutions are consistent with related trends discussed earlier in the study.

Another cost factor associated rather directly with instruction is the necessity for keeping programs, equipment and facilities up-to-date to meet changing educational requirements. The rapid discovery of new knowledge and technologies compels colleges and universities to modify and modernize their academic programs, to add new courses and new departments of instruction, and to undertake new interdisciplinary efforts and other specialized programs. Because of such academic innovation and modernization, there is a greater need for highly sophisticated and costly equipment and instructional materials. All of this implies higher costs, even without enlarged student enrollments.[10]

A third factor contributing to rising costs is the tendency of students to stay longer in college. Larger proportions of them are going into and completing the upper division, graduate, and professional studies. Since the institutional per student expenditures vary directly with the level of education attained, student aspirations for more advanced education force upward the average per student costs for each institution and contribute to larger annual operating budgets.

A fourth factor related to rising costs is the general inflationary tendency of the whole economy, from which colleges and universities are not exempt. Inflation, which gradually lowers the purchasing power of the dollar, results in higher costs for salaries, wages, equipment and supplies each year. During recent years, the annual rate of inflation averaged about 2 percent. However, the average rate of inflation for the construction industry has been far higher than the rate for the general economy, ranging as high as 7 to 10 percent per year.

A final factor contributing to rising costs is associated with the differences in long-term trends of productivity between education and services provided by other sectors in the economy. Many forms of work allow at least a partial offset to rising costs in the form of increased productivity. This is especially true when a specific economic value can be attached to the product. The nature of higher education does not permit easy measurement of a factor such as productivity. While increases in the quality of education are really increases in productivity, these changes are often subtle and occur over a longer period of time. In some important respects, however, productivity cannot be dramatically increased. Education is largely a personal process requiring the interaction of a teacher and a necessarily limited number of students. While computer-assisted instruction and closed-circuit television will sometimes allow more students to learn more intensely, they may not be replacements for instructors or effective substitutes for the personal dimension of the learning process. Colleges and universities probably cannot expect, therefore, to achieve significant cost savings through increases in productivity. Maintenance of quality in higher education will probably imply student-teacher ratios similar to the historical norms of the past.

It is no surprise, then, that the per student expenditures in both public and private institutions have risen at rates far higher than prices in the economy as a whole. For example, the average annual rate of increase of the per student expenditures (educational and general, excluding research) for all institutions has been 4.9 percent, more than twice the average

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[9] For a more complete discussion of increases in faculty compensation, see the *AAUP Bulletin*, Summer 1968, pp. 182–190.

[10] Technically, not all of the resultant expenditures can be ascribed to rising costs in this case because cost increases over time generally assume an unchanging product. However, the acquisition of new equipment, addition of new courses, etc., presumably are undertaken, at least in part, to improve the quality of education. Therefore, not all the increased expenditures can be attributed to rising costs because the nature of the product has been changed.

TABLE 12.—*Comparison of Educational and General Expenditures, Excluding Research Per FTE Student and Per FTE Student Income from Tuition and Fees*

	1959–60	1966–67	Average Annual Rate of Increase	Percent Increase 1959–60 to 1966–67
Public Institutions				
Average Educational and General Expenditures per FTE Student	$1,230	$1,630	4.1	32.5
Average per FTE Student Income from Tuition and Fees	196	291	5.8	48.5
Amount Required from Other Institutional Income	1,034	1,339	3.7	29.5
Private Institutions				
Average Educational and General Expenditures per FTE Student	1,259	1,966	6.6	56.2
Average per FTE Student Income from Tuition and Fees	727	1,178	7.1	62.0
Amount Required from Other Institutional Income	532	788	5.8	48.1

annual rate of inflation. The 6.6 percent rate of increase in per student expenditures for all private institutions is even higher, and private universities show the highest rate of increase at 7.2 percent for all types of institutions. The rate of increase in per-student expenditures for public institutions has been 4.1 percent, also far higher than the average increases of the general price index.

In summary, the personal nature of the educational process prevents significant increases in productivity. In contrast, other sectors of the economy to which higher education has made such significant contributions, are able to largely offset rising costs by increased productivity. As a result, the implications for higher education are clear. Educational costs will continue to outrun, at a compounded rate, the costs prevailing in the economy as a whole.

The rising per student expenditures place extreme pressure on the adequacy of institutional sources of income. In this respect, the most pressing issue for institutions of higher education may be whether expenditures per student are adequately compensated for by income per student. For measurement of this, the appropriate comparison is between the income received from tuition and fees and instructional expenditures categorized as "educational and general, excluding research." These are the roughly equivalent measures of how much money is received for allocation to instruction and how much is spent for that instruction. The tuition income and educational and general expenditures per FTE student, and the per capita difference between income and expenditure are illustrated by table 12.

This table clearly indicates that despite rapidly rising tuition charges, the difference between the amounts paid by the institution and the student for instructional purposes has been increasing each year. For public colleges and universities, the great difference between per student income and expenditure is reduced by the large amounts contributed from Federal, State and local governments. This degree of subsidy for students attending public institutions is strongly traditional. While the amount of the subsidy for each student is large ($1,339 in 1966–67), it has increased relatively slowly. Tuition income per student, while small in amount, has been increasing much faster than educational and general expenditures per student (5.8 percent versus 4.1 percent). But, because the subsidy differential is large in amount, it becomes a particularly costly factor when enrollments increase rapidly as they did at public institutions from 1959 to 1966.

Private colleges and universities, of course, rely on tuition and fees as a major source of their income. For this reason, the income-expenditure differential (1966–67) was only $788 for private colleges as compared to $1,339 for public institutions. However, the differential was increasing for private institutions more than half again as fast as for public colleges (5.8 percent versus 3.7 percent). The differential of $788 and its more rapid rate of increase must be measured against the smaller number of sources from which private colleges can close this financial gap. State and local government contributions to private institutions are a very small proportion of college budgets. Thus, in addition to tuition and fees, in 1966–67 only Federal contributions (30.4 percent) and private gifts and grants (11.8 percent) amounted to more than 10 percent of total revenue for educational and general purposes. Assuming no sudden change in these trends, the income-expenditure differential for private colleges is likely to continue to increase at a rapid rate.

In summary, analysis of major cost factors indicates that expenditures would continue to rise even if enrollments were not to increase. Rising faculty salaries, acquisition of materials and equipment, construction of new facilities, the effects of general economic inflation, efforts to maintain and improve quality of instruction, the necessity to broaden the range and depth of knowledge offered, and the personal nature of the educational process all imply more expensive education in the years ahead.

V. PROJECTION OF INSTITUTIONAL EXPENDITURES FOR 1975–76

This study has so far concentrated on a review of major trends in enrollment and finance which characterized the period from 1959–60 to 1966–67. In this section, an effort is

TABLE 13.—*Enrollment Projection I: Total Full-Time Equivalent Enrollment by Type of Institution**

(1955-67 and 1975-76)

Type of Institution	1966–67		1975–76	
	Number	Percent of Total	Number	Percent of Total
Public Institutions	3,420,532	67.0	5,761,000	73.3
Universities	(1,474,255)	(28.8)	(2,201,000)	(28.0)
Other 4-Year	(1,147,187)	(22.5)	(1,910,000)	(24.3)
Two-year	(799,090)	(15.7)	(1,650,000)	(21.0)
Private Institutions	1,684,064	33.0	2,099,000	26.7
Universities	(542,408)	(10.6)	(676,000)	(8.6)
Other 4-Year	(1,018,372)	(20.0)	(1,258,000)	(16.0)
Two-year	(123,284)	(2.4)	(165,000)	(2.1)
All Institutions	5,104,596	100.0	7,860,000	100.0
(Total Full- and Part-Time Students)	(6,438,477)		(10,029,000)	

*Taken from: *Projections of Education Statistics to 1977-78*, page 24, table 16. Since these projections include only the 50 States and the District of Columbia, the enrollments shown in table 13 have been adjusted to reflect total U.S. aggregate enrollment.

made to project enrollments and expenditures for 1975–76. It is, of course, difficult to make any precise projections of future enrollments and expenditures because of the wide range of assumptions on which such projections might be based, and because many conditions which could affect such projections cannot be foreseen at this time. For this reason, two enrollment and cost projections have been developed: one projection to indicate the consequences in quantitative terms if present trends and policies continue in the future; the other projection to show the resultant enrollments and expenditures if present trends are significantly changed with adoption of new priorities and implementation of new and expanded student and institutional aid programs.

Enrollment Projections

Since the Office of Education projections generally assume a continuation of past trends, the agency's official enrollment projections to 1975–76 have been used to represent Enrollment Projection I. These enrollment projections, reflecting a continuation of past trends in the future, are summarized in table 13 along with actual FTE enrollments during 1966–67 for comparative purposes.

The proportionate distribution between all public and private institutions has been calculated on the basis of Office of Education projections which assume that relative to public colleges, the proportionate enrollments for private institutions will continue to decline as they have in the past, even though actual numbers of students attending private colleges will increase each year. Among public institutions, the distribution of enrollments is based on the fact that State plans in general tend to recommend a controlled growth for lower division units of public universities with an increasing proportion of the States' lower division students enrolling in the State colleges and especially in public 2-year colleges. Among private institutions, it is assumed that the enrollment distribution will essentially follow past trends.

A second enrollment projection has been developed which is based on the assumption that the present inequalities in attendance rates between students coming from low and high income parents would be essentially removed by 1975–76.

The projections have been developed in the following manner. First, according to Census data, the 1965 median income for families with college age children was approximately $7,800. Second, based on the Census study of high school students, it is estimated that about 35 percent of the 1966 high school graduates with a family income of $7,800 or less had entered college by February 1967. In comparison, about 59 percent of the 1966 high school graduates with family incomes above $7,800 had entered college by February 1967.[11] Third, since the Census study does not include those students who delay their entrance to college for more than 6 months, the Census entrance rates must be adjusted to reflect late entrants to college. Estimates of late entrance have been developed from the unpublished Project TALENT 5-year followup of 1960 and 1961 high school graduates. These data show that the inclusion of late entrants in the calculation of entrance rates will increase the overall attendance rate by about 10 percent. In addition, Project TALENT data indicate that among late entrants, students from the upper two SES quartiles enter college at higher rates than students from the lower two SES quartiles. On this basis, it is estimated that the actual entrance rate for the 1966 high school graduates is 41 percent for those with family incomes of $7,800 and below, and 72 percent for those with incomes above $7,800.

The actual enrollment projections assume that beginning in 1971, high school graduates from the lower two income quartiles will enter at a rate of 72 percent, the same rate as students from the upper two income quartiles. The additional students expected to enroll have been estimated by calculating the difference for each year between the current 41 percent entrance and the assumed 72 percent entrance rate for high school graduates whose families are in the lower two income

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[11] "Factors Related to High School Graduation and College Attendance," 1967. *Current Population Reports*, Series P–20, No. 185, page 6, Table 8.

Table 14.—*Enrollment Projection II: Total Full-Time Equivalent Enrollment by Type of Institution* (1975-76)

Type of Institution	Number of Students (Enrollment Projection I)	Percent of Total	Number of Additional Students	Percent of Total	Total Projected Enrollment	Percent of Total
Public Institutions	5,761,000	73.3	806,000	80.0	6,567,000	74.1
Universities	(2,201,000)	(28.0)	(201,000)	(20.0)	(2,402,000)	(27.1)
Other 4-Year	(1,910,000)	(24.3)	(252,000)	(25.0)	(2,162,000)	(24.4)
Two-Year	(1,650,000)	(21.0)	(353,000)	(35.0)	(2,003,000)	(22.6)
Private Institutions	2,099,000	26.7	201,000	20.0	2,300,000	25.9
Universities	(676,000)	(8.6)	(50,000)	(5.0)	(726,000)	(8.2)
Other 4-Year	(1,258,000)	(16.0)	(141,000)	(14.0)	(1,399,000)	(15.8)
Two-Year	(165,000)	(2.1)	(10,000)	(1.0)	(175,000)	(1.9)
All Institutions	7,860,000	100.0	1,007,000	100.0	8,867,000	100.0
(Total Full- and Part-Time Students)	(10,029,000)		(1,285,000)		(11,314,000)	

quartiles. These estimates have been further adjusted for dropout rates,[12] and for the increasing entry rates already assumed by the Office of Education projections.

Several additional assumptions made for purposes of these enrollment projections need to be pointed out. First, although the median family income will continue to rise, it is assumed that the distribution of high school graduates within each quartile will remain essentially unchanged. Second, the 72 percent entrance rate assumes the removal of all financial and motivational barriers. It is recognized, of course, that the removal of particularly motivational barriers by 1975 is an optimistic objective because the deep-seated effects of many factors characteristic of low-income groups are extremely difficult to overcome in such a short time. Yet, this assumption is dictated by the necessity to determine the eligible population for each of the 5 years beginning with 1971. In addition, the usage of the 72 percent figure is not meant to imply a fixed ceiling or saturation point beyond which attendance rates will not or should not go. Rather, this paper assumes equalization of attendance rates between higher and lower family income levels as a desirable goal.

On this basis it is projected that by the fall of 1975, an additional 1,285,000 students above current projections would enter college on a full- and part-time basis. These projections are summarized in table 14.

The basic assumption made in the distribution of the additional students by type of institution relates to the fact that the additional students will come from predominantly low-income families, and, as a result, are more likely to attend low tuition colleges. For example, a Bureau of Census study of 1966 college students indicates that of the students with family incomes between $3,000 and $5,000 attending 4-year colleges, nearly 35 percent attended schools with tuitions and fees of less than $250 and nearly 72 percent attended colleges with charges of less than $500.[13] Therefore, it is assumed that this additional group of students would enter public institutions at higher rates than is the case for normal enrollment patterns.

Before turning to the expenditure projections, it must be pointed out that implicit in the estimated distribution of students by type of institution is the assumption that the current tuition policies between public and private institutions and the present mix of student financial aid programs will remain essentially unchanged in the future. Any significant departure from present tuition structures and the grant-loan mix of current student aid programs could also substantially change the current attendance patterns. If this should be the case, the following expenditure projections would also be correspondingly affected.

Expenditure Projections for 1975–76

Two principal factors determine institutional expenditures—enrollments and rising educational costs. Based on the historical analysis of financial trends, there is every reason to believe that educational costs will continue to rise at higher rates relative to the cost of other services in the economy. Therefore, institutional expenditures with the exception of research have been projected on a per student basis by determining the cost per student which is consistent with past trends, applying to it a compound rate of increase factor selected on the basis of historical trends, and multiplying the 1975–76 estimated per student expenditures by the total enrollment. Since varying assumptions have to be applied to different expenditure categories, separate projections have been developed for current fund expenditures excluding research, expenditures for research, and plant-fund expenditures.

Current-Fund Expenditures, Excluding Research

The current-fund expenditures have been projected by applying the historical rate of increase in per student costs to the 1966–67 per FTE student expenditures and multiplying the 1975–76 per FTE student expenditures by the projected enrollment. For purposes of these projections it has been assumed that the annual rate of increase in per student costs will follow past trends. On this basis, it is projected that total current-fund expenditures excluding research will be $28.2

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[12] Students continuing after their first year have been estimated on the basis of the following assumed dropout rates: Of those entering, 75 percent will return the second year, 55 percent will return for the third year, and 50 percent will return for the fourth year.

[13] "Characteristics of Students and Their Colleges, October 1966," *Current Population Reports*, Series P-20, No. 183, page 13, Table 4.

billion for Enrollment Projection I and $31.4 billion for Enrollment Projection II. These projections are summarized in tables 15 and 16.

Research Expenditures

Expenditures for organized research have, of course, no direct relationship to student enrollments. In addition, because of the variable nature of research activities, it is extremely difficult to develop any kind of reliable projection for research expenditures. Between 1959–60 and 1966–67, research expenditures for all institutions have increased nearly by 150 percent, rising from over $1 billion to more than $2.5 billion. Since there are some indications that research support in the future will rise at substantially lower rates than it has in the past, it is estimated for the purposes of this study that during 1975–76 expenditures for research will total $4 billion, a 60 percent increase over the 1966–67 level. A second assumption is that the distribution of expenditures by type of institution will be essentially the same as for 1966–67 with private institutions conducting better than half of total institutional research activities. It is further assumed that research expenditures will not be affected by enrollment changes. The projected 1975–76 research expenditures are presented in table 17.

TABLE 15.—*Projected Current-Fund Expenditures, Excluding Research, 1975–76: Enrollment Projection I*

Type of Institution	Expenditures Per FTE Student (1966–67)	Estimated Average Annual Rate of Increase (1968–75)	Multiplicative Factor	Projected Expenditures Per FTE Student (1975–76)	Projected FTE Enrollment (1975–76)	Projected Total Expenditures (1975–76)*
Public Institutions						
Universities	$2,906	4.8	1.5253	$4,433	2,201,000	$9,757,000
Other 4-Year	1,785	4.7	1.5122	2,699	1,910,000	5,155,100
Two-year	1,015	5.7	1.6472	1,672	1,650,000	2,758,800
Private Institutions						
Universities	3,763	7.4	1.9016	7,156	676,000	4,837,500
Other 4-Year	2,364	6.8	1.8081	4,274	1,258,000	5,376,700
Two-year	1,542	3.8	1.3991	2,157	165,000	355,900
All Institutions					7,860,000	28,241,000

* In thousands of dollars.

TABLE 16.—*Projected Current-Fund Expenditures, Excluding Research, 1975–76: Enrollment Projection II*

Type of Institution	Expenditures Per FTE Student (1966–67)	Estimated Average Annual Rate of Increase (1968–75)	Multiplicative Factor	Projected Expenditures Per FTE Student (1975–76)	Projected FTE Enrollment (1975–76)	Projected Total Expenditures (1975–76)*
Public Institutions						
Universities	$2,906	4.8	1.5253	$4,433	2,402,000	$10,648,100
Other 4-Year	1,785	4.7	1.5122	2,699	2,162,000	5,835,200
Two-year	1,015	5.7	1.6472	1,672	2,003,000	3,349,000
Private Institutions						
Universities	3,763	7.4	1.9016	7,156	726,000	5,195,300
Other 4-Year	2,364	6.8	1.8081	4,274	1,399,000	5,979,300
Two-year	1,542	3.8	1.3991	2,157	175,000	377,500
All Institutions					8,867,000	31,384,400

* In thousands of dollars.

TABLE 17.—*Projected Expenditures for Organized Research, 1975–76: Enrollment Projections I and II*

(in thousands of dollars)

Type of Institution	Research Expenditures 1966–67	Percent of Total	Estimated Research Expenditures 1975–76	Percent of Total
Public Institutions	$1,219,218	48.4	$1,936,000	48.4
Universities	(1,161,407)	(46.1)	(1,843,000)	(46.1)
Other 4-Year	(57,468)	(2.3)	(92,000)	(2.3)
Two-year	(325)	*	(1,000)	*
Private Institutions	1,301,819	51.6	2,064,000	51.6
Universities	(956,760)	(38.0)	(1,519,000)	(38.0)
Other 4-Year	(343,982)	(13.6)	(543,000)	(13.6)
Two-year	(1,077)	*	(2,000)	*
All Institutions	2,521,037	100.0	4,000,000	100.0

*Less than 1 percent.

Table 18.—*Projected Plant-Funds Expenditures, 1975–76: Enrollment Projection I*

Type of Institution	Average Expenditures per Additional FTE Student (1959–1967)	Estimated Average Annual Rate of Increase of Construction Costs (1968—1976)	Multiplicative Factor	Projected Expenditures for Additional FTE Student (1975–76)	Projected FTE Enrollment Increment (1974—75 to 1975–76)	Projected Total Expenditures (1975–76)*
Public Institutions						
Universities	$9,835	5.5	1.6190	$15,923	86,060	$1,370,300
Other 4-year	6,555	5.5	1.6190	10,613	90,310	958,500
Two-Year	2,667	5.5	1.6190	4,318	100,730	435,000
Private Institutions						
Universities	14,860	5.5	1.6190	24,058	15,650	376,500
Other 4-year	12,455	5.5	1.6190	20,165	28,360	571,900
Two-Year	4,797	5.5	1.6190	7,766	4,890	38,000
All Institutions					326,000	3,750,200

* In thousands of dollars.

Table 19.—*Projected Plant-Funds Expenditures, 1975–76: Enrollment Projection II*

Type of Institution	Average Expenditures per Additional FTE Student (1959–67)	Estimated Average Annual Rate of Increase of Construction Costs (1968–1976)	Multiplicative Factor	Projected Expenditure for Additional FTE Student (1975–76)	Projected FTE Enrollment Increment (1974—75 to 1975–76)	Projected Total Expenditures (1975–76)*
Public Institutions						
Universities	$9,835	5.5	1.6190	$15,923	86,100	$1,371,000
Other 4-year	6,555	5.5	1.6190	10,613	94,500	1,002,900
Two-Year	2,667	5.5	1.6190	4,318	112,000	483,600
Private Institutions						
Universities	14,860	5.5	1.6190	24,058	17,150	412,600
Other 4-year	12,455	5.5	1.6190	20,165	35,350	712,800
Two-Year	4,797	5.5	1.6190	7,766	4,900	38,100
All Institutions					350,000	4,021,000

* In thousands of dollars.

Plant-Fund Expenditures

Unlike current-fund expenditures, plant-fund expenditures cannot be related to enrollments on an annual basis. Capital investments tend to bunch or slacken depending on the irregularities of available resources such as revenues derived from bond elections. In addition, the delay between initial commitment of funds and the completion of the construction project makes projections from any single base-year extremely hazardous. For this reason, the following projections have been developed on the basis of the experience during the 5 years included in the historical base.

More specifically, expenditures from plant-funds for 1975–76 have been estimated by calculating the average expenditures per additional FTE student during the 5 years (1959; 1961; 1963; 1965; 1966). In order to incorporate cost increases into the projections, it is assumed that construction costs will rise at an average annual rate of 5.5 percent. This estimate is based on the construction cost index developed by the American Appraisal Company, which shows that the cost index for building construction has risen at an annual rate of nearly 5.5 percent between 1965 and 1968.[14] The time period of 1965 to 1968 was chosen in order to reflect the rapid increases in construction costs during recent years. The projected 1975–76 per student expenditures were derived by applying the 5.5 rate of increase to the average per student expenditures developed from the historical base.

The total projected plant-fund expenditures were then calculated by multiplying the projected 1975–76 per student expenditures by the estimated enrollment increase between 1974–75 and 1975–76. As shown in tables 18 and 19, the total 1975–76 plant-fund expenditures for Enrollment Projection I are estimated to be $3.75 billion, and for Enrollment Projection II are projected to be $4.02 billion.

It should be noted that, for the purposes of this study, plant-fund expenditures are defined to include outlays for additions to the physical plant as well as expenditures for reduction of capital indebtedness and other deductions from unexpended plant funds, including such expenditures as interest payments on plant indebtedness paid from plant funds. Outlays for additions to the plant which include disbursements for renewals, replacements, and major repairs constitute approximately 81 percent of the total plant-fund expenditures. For comparative purposes, the expenditures for additions to the physical plant *only* have also been estimated for 1975–76. Using the projection method outlined earlier, outlays for additions to plant are projected to be $3.05 billion and $3.28 billion for Enrollment Projections I and II respectively (see table 20).

It should be further understood that the plant-fund expenditure estimates for both enrollment projections assume that

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[14] *Statistical Abstract of the United States*, 1969, U.S. Bureau of Census, p. 692, table 1068.

TABLE 20.—*Projected Plant-Fund Expenditures for Additions to Plant, 1975-76*

(in thousands of dollars)

Type of Institution	Enrollment Projection I	Enrollment Projection II
Public Universities		
Universities	$1,069,800	$1,070,300
Other 4-Year	816,800	854,700
Two-Year	369,400	410,700
Private Universities		
Universities	301,400	330,300
Other 4-Year	464,800	579,400
Two-Year	30,700	30,800
All Institutions	3,052,900	3,276,200

past construction efforts will continue in the future. As such, the projections do not provide for a closing of the current gap between existing and needed facilities.[15] In order to close the facilities gap, it is estimated that beginning in 1971 through 1975 an average of about $225 million per year would have to be committed in addition to current projections.

It must also be pointed out that the average plant-fund expenditures for Enrollment Projection II between 1971 and 1975 would be considerably higher than the $4.02 billion projected for 1975–76. Enrollment Projection II is based on the assumption that high school graduates will enter college at a rate of 72 percent beginning 1971. During each subsequent year until 1974, colleges and universities would have to accommodate an estimated average of 470,000 new students each year in addition to current Office of Education projections. Consequently, expenditures for construction are estimated to be between $5 and $6 billion per year during 1971 to 1974.

Beginning with 1975, the additional gains in student enrollments are only a function of annual increases in the number of high school graduates. As such, the projected 1975–76 expenditures of $4.02 billion reflect a resumption of normal plant-fund expenditure trends.

Total Projected Expenditures

Table 21 summarizes the total projected institutional expenditures for 1975–76. For Enrollment Projection I which assumes continuation of past enrollment trends, total institutional expenditures are estimated to be nearly $36.0 billion. In comparison, for Enrollment Projection II which assumes significant increases of enrollment, total expenditures are projected to be $39.4 billion. The difference of $3.4 billion between the low and high enrollment projections provides some measure of the additional resources required for the expansion of educational opportunities.

Projections of expenditures, of course, do not imply that available income will also grow at commensurate rates. If the rate of growth of income declines in the future, expenditures will adjust even if this means cutting back on important programs. Yet, the projections of expenditures which are based on historical growth rates do provide an estimate of the resources needed to maintain and improve higher education at similar rates in the future. As such, the expenditure projections serve as estimates of total need against which alternative strategies for the financing of higher education can be evaluated.

VI. FUTURE INCOME TRENDS

Unlike projections for expenditures which can be more solidly based on historical trends, estimates for future income are extremely difficult to make with any precision. While historical income trends do have some relevance for the future, it is also clear that income predictions necessarily involve future policy decisions and possible reordering of priorities. The probability of these policy changes makes unrealistic any attempt to extrapolate past income trends. Changes in the premises underlying support for higher education would, in effect, alter the entire pattern or composition of institutional support. Even a small shift of emphasis in policy can bring about large increases or decreases when measured in dollars. For these reasons, estimates of future income have not been developed. Rather, some general comments are made concerning major factors which have an important bearing on the various sources and amounts of income.

Questions of priority will importantly affect the availability of future income. This is particularly relevant for Federal, State and local sources of support. Growing demands for traditional services and expansion of new ones may significantly influence the emphasis given to higher education. Because of the diverse and increasing commitments for public services, the budgetary priority of higher education cannot be considered as fixed. The various ways in which Federal, State and local governments will balance these commitments during the future years will have an important bearing on the levels of support for higher education.

In addition, a basic issue relating to the problem of who should pay for higher education deals with the question as to the relative benefits of education to the student and society. Depending on whether the student or society is considered the primary beneficiary of higher education, projections of institutional income can vary widely as to the proportionate share of educational costs to be met by public sources and by individual students. The issue of "who should pay" is further complicated by the fact that tuition charges rarely reflect the full cost of services provided, and the element of institutional subsidy varies widely among different types of institutions. In addition, assumptions about future tuition levels also involve questions about the methods of financing utilized by students and parents. The relationship between tuition levels and family income has an important effect upon whether education can be financed out of current earnings and assets, or whether increased loans, grants, or work opportunities will have to be made available as supplements.

Apart from the largely unpredictable changes of policies

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[15] For further discussion of facilities currently in place as well as higher education facilities needs, see *Federal Support for Higher Education Construction: Current Programs and Future Needs.* Higher Education Construction Programs Study Group, chaired by Chalmers G. Norris of The Pennsylvania State University, U.S. Office of Education, 1969. This report provides for a considerably more complex and refined methodology for estimating future needs than the one utilized in this study. However, expenditure projections developed by either method are not significantly different.

TABLE 21.—*Expenditure Projection for 1975-1976* (in thousands of dollars)

Type of Institution	Enrollment Projection I: Current-Funds Expenditures Excluding Research	Enrollment Projection I: Organized Research Expenditures	Enrollment Projection I: Plant-Funds Expenditures	Enrollment Projection I: Total Expenditures	Enrollment Projection II: Current-Funds Expenditures excluding Research	Enrollment Projection II: Organized Research Expenditures	Enrollment Projection II: Plant-Funds Expenditures	Enrollment Projection II: Total Expenditures
Public Institutions	$17,670,900	$1,936,000	$2,763,800	$22,370,700	$19,832,300	$1,936,000	$2,857,500	$24,625,800
Universities	(9,757,000)	(1,843,000)	(1,370,300)	(12,970,300)	(10,648,100)	(1,843,000)	(1,371,000)	(13,862,100)
Other 4-Year	(5,155,100)	(92,000)	(958,500)	(6,205,600)	(5,835,200)	(92,000)	(1,002,900)	(6,930,100)
2-Year	(2,758,800)	(1,000)	(435,000)	(3,194,800)	(3,349,000)	(1,000)	(483,600)	(3,833,600)
Private Institutions	10,570,100	2,064,000	986,400	13,620,500	11,552,100	2,064,000	1,163,500	14,779,600
Universities	(4,837,500)	(1,519,000)	(376,500)	(6,733,000)	(5,195,300)	(1,519,000)	(412,600)	(7,126,900)
Other 4-Year	(5,376,700)	(543,000)	(571,900)	(6,491,600)	(5,979,300)	(543,000)	(712,800)	(7,235,100)
2-Year	(355,900)	(2,000)	(38,000)	(395,900)	(377,500)	(2,000)	(38,100)	(417,600)
All Institutions	28,241,000	4,000,000	3,750,200	35,991,200	31,384,400	4,000,000	4,021,000	39,405,400

and priorities in higher education, it is certain that costs and expenditures will continue to increase during future years. In the absence of dramatic increases in amounts obtained from traditional sources of support, colleges and universities are likely to experience continued financial pressures. Unless there is much greater growth in State and voluntary support, as well as in Federal assistance, colleges are likely to become more dependent upon income from tuition and fees. As evidenced by the recent sharp increases of student charges at both public and private colleges, a continuation of present income trends will have the effect of shifting a greater proportion of the cost of education to the individual student and his family.

TECHNICAL APPENDIX

One of the major objectives of this paper is to develop a data base which can be used to analyze historical financial trends. After a review of available information, it became evident that only the Office of Education survey data on financial statistics of higher education could satisfactorily meet this requirement. For this reason, all financial data, unless otherwise noted, are based on Office of Education surveys. The appendix tables H–1 through H–20 represent an effort to compile financial data which are comparable from year to year. All other tables and statistical analyses in this paper are derived from these basic source tables.

The financial data collected in the source tables relate only to current (operating) and plant-fund income and expenditures because nearly all receipts from contributors to higher education are allocated for operating and capital improvement purposes. The major exception to this is voluntary support where substantial amounts of private gifts and grants are contributed to endowment, annuity, living trust funds, and other funds. Income from private sources to these funds has been reported separately in the source tables.

In the development of the source tables, Office of Education definitions and categories were utilized to the extent possible. For further explanation of use of terms and definitions, the interested reader is referred to the source documents cited with each table. However, it should be noted that frequent changes in the Office of Education survey forms, additions of new reporting categories, omission of other categories, and, in some cases, lack of detail in reported data posed special problems in keeping the data comparable for different years. The major difficulties encountered are as follows:

1. Although Office of Education surveys attempt to classify income both by source and purpose, the source of income has not been consistently identified for several income categories. Particularly with regard to income for student aid purposes, the source of income has not been sufficiently identified in surveys conducted prior to 1966 to maintain comparability with later surveys. For this reason, revenues contributed to institutional student aid funds are not listed by individual source. However, total student aid revenues are reflected in the aggregate income totals. According to the 1966–67 HEGIS survey, revenues received during that year for institutional student aid funds are as follows:

Federal Government	$191,472,000
State Governments	39,741,000
Local Governments	4,234,000
Private Gifts and Grants	91,787,000
Endowment Income	48,932,000
Other Student Aid	22,003,000
Total Student Aid Receipts	$398,169,000

Since the amounts contributed to institutional student aid funds constitute only a comparatively small portion of total contributions for each source, it is not likely that the analysis of financial trends is significantly affected.

A similar problem exists with respect to endowment earnings and income from tuition and fees for which only the allocations for educational and general purposes are specified in the source tables because allocations from endowment and tuition income for other purposes, such as student aid and capital improvements, are not consistently identified for all historical base years. With respect to endowment earnings, the 1966–67 HEGIS survey indicates that total earnings from endowment funds were $454,801,000 of which $328,377,000 were reported as income for educational and general purposes. In the case of tuition and fees income, it is estimated that over 90 percent is allocated for educational and general purposes with the remainder going principally for capital improvement and student aid purposes.

Again, it is unlikely that the basic trends concerning endowment and tuition income would be significantly affected even if total contributions from each source were considered.

In summary, since it is impossible to consistently identify all revenues by source from the Office of Education data, nearly all receipts identified by source are slightly less than the actual total contribution for each source. The total institutional income, of course, is reflected in the aggregate totals.

2. With respect to borrowing funds for capital improvements, it should be noted that institutions report on the HEGIS surveys only those loans which create a direct obligation to the school. As a result, funds borrowed by a building authority on behalf of one or several institutions are not reported on the HEGIS surveys since the loan creates no obligation against the institution as such. Consequently, the extent of borrowing to support higher education is considerably larger than the HEGIS data suggest. Estimates of the additional loan funds made available for construction in this manner are not readily available.

3. As already mentioned, the repeated changes of reporting categories in the Office of Education surveys present special problems in maintaining comparable data between reporting periods. Since the specific changes have been footnoted on the source tables, only some general comments will be made. With respect to income for educational and general purposes and direct plant-fund income, all revenues received from other than "traditional" sources of income are listed under "Other Income." Because of the frequent changes in the reporting categories, particularly for the 1965–66 and 1966–67 HEGIS surveys, it is impracticable to establish finer breaks which would be compatible for all years included in the base period.

In addition, it should be noted that transfers to capital fund accounts were not requested in the 1965–66 HEGIS form and institutions reported transfers as "Other Income" for that year. As a result, the "Other Income" category under plant-fund receipts shows a disproportionate increase in the 1965–66 data.

With regard to current-fund expenditures, it should be noted that the 1965–66 and 1966–67 HEGIS surveys added a new category of "expenditures for other sponsored activities." In previous surveys, these funds were distributed among the educational and general expenditure categories depending on the purpose of the expenditure. For this reason, expenditures for activities related to educational departments, sales and services, other sponsored activities, and other miscellaneous expenditures were listed as "other expenditures" in the source tables for 1965–66 and 1966–67.

In addition, the 1965–66 and 1966–67 surveys included a new category for "expenditures for physical plant assets" from current funds. Again, during previous years these expenditures were included among educational and general expenditure categories depending on their purpose. The current fund expenditures for physical plant assets have been included as a new category in the source tables. Because of the addition of new reporting categories, the proportionate decline of instruction and departmental research and the corresponding increase of "all other educational and general" (see appendix tables F1–9) during 1966 and 1967 are largely explained by the fact that some expenditures which were formerly included in larger aggregates are not reported under separate headings.

It should also be noted that the "other deductions" from plant-funds such as interest on plant-indebtedness paid from plant-funds, and transfers and loans from plant-funds to other institutional funds were not requested in the 1966 and 1967 surveys. In order to maintain some comparability with previous years, the "other deductions" listed in the source tables for 1966 and 1967 were estimated on the basis of 1959 to 1964 trends.

4. The Office of Education financial surveys contain some duplicate accounting of revenues between current-fund and plant-fund income. This is particularly true of transfers to plant-fund accounts and plant-fund loan receipts from institutional sources. With respect to transfers, it is estimated that 69 percent of these funds were transferred from current-fund accounts to plant-fund accounts. As a result, approximately two-thirds of the transfer funds were included in both the current and plant-fund accounts. Similarly, some duplicate accounting of funds exists for the plant-fund loan receipts from institutional sources. However, the amount of funds which is reported twice is comparatively small and, for this reason, it is not likely that the major trends discussed in the paper are significantly affected by this data problem.

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APPENDIX TABLES

Enrollment Data A 1–2
Institutional Revenues B 1–7
Institutional Expenditures C 1–3
Institutional Income by Source D 1–6
Distribution of Institutional Revenues by Source E 1–9
Distribution of Institutional Expenditures by Function F 1–9
Per Student Expenditures G 1–4
Per Student Tuition and Fee Income G 5
Institutional Income and Expenditure Source Data (1959–60 – 1966–67) H 1–20

TABLE A-1—*Total Degree and Non-Degree Credit Enrollment by Type of Institution, Number, Percent of Total, and Rate of Increase*

Type of Institution	1959-60	1961-62	1963-64	1965-66	1966-67	Average Annual Rate of Increase	Growth Index (1959-60 =100%)
ALL PUBLIC INSTITUTIONS							
Number	2,200,274	2,584,548	3,090,578	3,999,940	4,381,086		199.1
Percent of Total	60.0	61.9	64.4	67.0	68.0		
Rate of Increase		17.5	19.6	29.4	9.5	10.3	
Universities							
Number	977,829	1,129,068	1,334,916	1,657,447	1,778,640		181.9
Percent of Total	26.7	27.0	27.8	27.7	27.6		
Rate of Increase		15.5	18.2	24.2	7.3	8.9	
Other 4-Year Institutions							
Number	748,792	862,591	1,018,596	1,299,115	1,410,664		188.4
Percent of Total	20.4	20.7	21.2	21.8	21.9		
Rate of Increase		15.2	18.1	27.5	8.6	9.5	
2-Year Institutions							
Number	473,653	592,889	737,066	1,043,378	1,191,782		251.6
Percent of Total	12.9	14.2	15.4	17.5	18.5		
Rate of Increase		25.2	24.3	41.6	14.2	14.1	
ALL PRIVATE INSTITUTIONS							
Number	1,465,177	1,591,641	1,709,754	1,967,471	2,057,391		140.4
Percent of Total	40.0	38.1	35.6	33.0	32.0		
Rate of Increase		8.6	7.4	15.1	4.6	5.0	
Universities							
Number	513,856	554,420	591,564	674,688	703,396		136.9
Percent of Total	14.0	13.3	12.3	11.3	10.9		
Rate of Increase		7.9	6.7	14.1	4.3	4.6	
Other 4-Year Institutions							
Number	864,488	939,795	1,007,684	1,159,309	1,214,921		140.5
Percent of Total	23.6	22.5	21.0	19.5	18.9		
Rate of Increase		8.7	7.2	15.0	4.8	5.0	
2-Year Institutions							
Number	86,833	97,426	110,506	133,474	139,074		160.2
Percent of Total	2.4	2.3	2.3	2.2	2.2		
Rate of Increase		12.2	13.4	20.8	4.2	7.0	
TOTAL—ALL INSTITUTIONS							
Number	3,665,451	4,176,189	4,800,332	5,967,411	6,438,477		175.7
Percent of Total	100.0	100.0	100.0	100.0	100.0		
Rate of Increase		13.9	14.9	24.3	7.9	8.4	

SOURCES: U.S. Office of Education, *Opening Fall Enrollment in Higher Education.* 1966. p. 109
U.S. Office of Education, *Opening Fall Enrollment in Higher Education.* 1965. p. 90
U.S. Office of Education, *Opening Fall Enrollment in Higher Education.* 1963. p. 68
U.S. Office of Education, *Comprehensive Report on Enrollment in Higher Education.* 1961-62. p. 85. This Comprehensive Report also presents revised data for 1959 and is, therefore, also the basis for that year's enrollment data.

TABLE A-2—*Total Full-Time Equivalent Enrollment* by Type of Institution, Number, Percent of Total, and Rate of Increase*

Type of Institution	1959-60	1961-62	1963-64	1965-66	1966-67	Average Annual Rate of Increase	Growth Index (1959-60 =100%)
ALL PUBLIC INSTITUTIONS							
Number	1,686,704	1,987,933	2,368,927	3,116,758	3,420,532		202.8
Percent of Total	59.7	61.3	63.7	66.2	67.0		
Rate of Increase		17.9	19.2	31.6	9.8	10.6	
Universities							
Number	791,702	920,377	1,091,506	1,367,462	1,474,255		186.2
Percent of Total	28.0	28.4	29.4	29.0	28.8		
Rate of Increase		16.3	18.6	25.3	7.8	9.3	
Other 4-Year Institutions							
Number	587,839	682,346	808,615	1,055,216	1,147,187		195.2
Percent of Total	20.8	21.0	21.7	22.4	22.5		
Rate of Increase		16.1	18.5	30.5	8.7	10.0	
2-Year Institutions							
Number	307,163	385,210	468,806	694,080	799,090		260.2
Percent of Total	10.9	11.9	12.6	14.8	15.7		
Rate of Increase		25.4	21.7	48.1	15.1	14.6	
ALL PRIVATE INSTITUTIONS							
Number	1,139,885	1,252,675	1,352,265	1,588,399	1,684,064		147.7
Percent of Total	40.3	38.7	36.3	33.8	33.0		
Rate of Increase		9.9	8.0	17.5	6.0	5.7	
Universities							
Number	369,696	404,447	435,506	512,006	542,408		146.7
Percent of Total	13.1	12.5	11.7	10.9	10.6		
Rate of Increase		9.4	7.7	17.6	5.9	5.6	
Other 4-Year Institutions							
Number	702,015	771,152	831,305	966,883	1,018,372		145.1
Percent of Total	24.8	23.8	22.3	20.6	20.0		
Rate of Increase		9.8	7.8	16.3	5.3	5.5	
2-Year Institutions							
Number	68,174	77,076	85,454	109,510	123,284		180.8
Percent of Total	2.4	2.4	2.3	2.3	2.4		
Rate of Increase		13.1	10.9	28.2	12.6	8.8	
TOTAL—ALL INSTITUTIONS							
Number	2,826,589	3,240,608	3,721,192	4,705,157	5,104,596		180.6
Percent of Total	100.0	100.0	100.0	100.0	100.0		
Rate of Increase		14.6	14.8	26.4	8.5	8.8	

*Figures for full-time equivalent (FTE) enrollment represent an arithmetic conversion of part-time degree and nondegree students to an equivalent number of full-time students. The formula upon which the conversion is based makes the following assumptions: one part-time degree student is equivalent to .33 of a full-time student; one part-time nondegree student is equivalent to .28 of a full-time student. The formula when applied, results in the multiplication of the number part-time degree and nondegree students enrolled by their respective values (.33 and .28). The result is an FTE figure which is added to the reported full-time degree and nondegree enrollments.

TABLE B-1—*Total Current and Plant Fund Income, Including Loans by Type of Institution, Amount, Percent of Total, and Rate of Increase*

(in thousands of dollars)

Type of Institution	1959-60	1961-62	1963-64	1965-66	1966-67	Average Annual Rate of Increase	Growth Index (1959-60 =100%)
ALL PUBLIC INSTITUTIONS							
Amount	$4,108,537	$5,316,708	$6,975,020	$9,749,242	$11,174,108		272.0
Percent of Total	57.6	57.2	57.5	59.9	60.3		
Rate of Increase		29.4	31.2	39.8	14.6	15.4	
Universities							
Amount	2,692,757	3,537,412	4,633,847	6,105,234	6,876,091		255.4
Percent of Total	37.7	38.1	38.2	37.5	37.1		
Rate of Increase		31.4	31.0	31.8	12.6	14.3	
Other 4-Year Institutions							
Amount	1,101,729	1,359,268	1,782,930	2,567,723	3,015,454		273.7
Percent of Total	15.5	14.6	14.7	15.8	16.3		
Rate of Increase		23.4	31.2	43.9	17.4	15.5	
2-Year Institutions							
Amount	314,051	420,028	557,243	1,076,285	1,282,563		408.4
Percent of Total	4.4	4.5	4.6	6.6	6.9		
Rate of Increase		33.7	32.7	93.1	19.2	22.3	
ALL PRIVATE INSTITUTIONS							
Amount	3,016,135	3,970,504	5,150,487	6,534,372	7,363,012		244.1
Percent of Total	42.4	42.8	42.5	40.1	39.7		
Rate of Increase		31.6	29.7	26.9	12.7	13.6	
Universities							
Amount	1,396,811	1,797,726	2,303,685	2,857,298	3,445,043		246.6
Percent of Total	19.6	19.4	19.0	17.5	18.6		
Rate of Increase		28.7	28.1	24.0	20.6	13.8	
Other 4-Year Institutions							
Amount	1,517,186	2,045,497	2,676,359	3,447,828	3,651,392		240.7
Percent of Total	21.4	22.0	22.1	21.2	19.7		
Rate of Increase		34.8	30.8	28.8	5.9	13.4	
2-Year Institutions							
Amount	102,138	127,281	170,443	229,246	266,577		261.0
Percent of Total	1.4	1.4	1.4	1.4	1.4		
Rate of Increase		24.6	33.9	34.5	16.3	14.7	
TOTAL—ALL INSTITUTIONS							
Amount	7,124,672	9,287,212	12,125,507	16,283,614	18,537,120		260.2
Percent of Total	100.0	100.0	100.0	100.0	100.0		
Rate of Increase		30.4	30.6	34.3	13.8	14.6	

TABLE B-2—*Total Current Fund Income and Plant-Fund Receipts (excluding loans) by Type of Institution, Amount, Percent of Total, and Rate of Increase*

(in thousands of dollars)

Type of Institution	1959-60	1961-62	1963-64	1965-66	1966-67	Average Annual Rate of Increase	Growth Index (1959-60 =100%)
ALL PUBLIC INSTITUTIONS							
Amount	$3,860,644	$4,991,837	$6,512,682	$8,741,422	$9,931,676		257.3
Percent of Total	57.4	57.1	57.5	59.5	59.7		
Rate of Increase		29.3	30.5	34.2	13.6	14.5	
Universities							
Amount	2,547,240	3,349,936	4,336,269	5,613,365	6,247,719		245.3
Percent of Total	37.9	38.3	38.3	38.2	37.5		
Rate of Increase		31.5	29.4	29.5	11.3	13.7	
Other 4-Year Institutions							
Amount	1,042,069	1,264,041	1,653,262	2,237,348	2,576,099		247.2
Percent of Total	15.5	14.5	14.6	15.2	15.5		
Rate of Increase		21.3	30.8	35.3	15.1	13.8	
2-Year Institutions							
Amount	271,335	377,858	522,611	890,708	1,107,758		408.3
Percent of Total	4.0	4.3	4.6	6.1	6.7		
Rate of Increase		39.3	38.3	70.4	24.4	22.3	
ALL PRIVATE INSTITUTIONS							
Amount	2,868,642	3,747,376	4,804,244	5,950,988	6,703,662		233.7
Percent of Total	42.6	42.9	42.5	40.5	40.3		
Rate of Increase		30.6	28.2	23.9	12.6	12.9	
Universities							
Amount	1,346,299	1,735,097	2,159,084	2,703,958	3,291,608		244.5
Percent of Total	20.0	19.9	19.1	18.4	19.8		
Rate of Increase		28.9	24.4	25.2	21.7	13.6	
Other 4-Year Institutions							
Amount	1,424,311	1,891,472	2,489,760	3,047,253	3,185,597		223.7
Percent of Total	21.2	21.6	22.0	20.7	19.1		
Rate of Increase		32.8	31.6	22.4	4.5	12.2	
2-Year Institutions							
Amount	98,032	120,807	155,400	199,777	226,457		231.0
Percent of Total	1.4	1.4	1.4	1.4	1.4		
Rate of Increase		23.2	28.6	28.6	13.4	12.7	
TOTAL—ALL INSTITUTIONS							
Amount	6,729,286	8,739,213	11,316,926	14,692,410	16,635,338		247.2
Percent of Total	100.0	100.0	100.0	100.0	100.0		
Rate of Increase		29.9	29.5	29.8	13.2	13.8	

TABLE B-3—*Total Current-Fund Income by Type of Institution, Amount, Percent of Total, and Rate of Increase*

(in thousands of dollars)

Type of Institution	1959-60	1961-62	1963-64	1965-66	1966-67	Average Annual Rate of Increase	Growth Index (1959-60 =100%)
ALL PUBLIC INSTITUTIONS							
Amount	$3,276,650	$4,147,429	$5,368,678	$7,397,675	$8,622,426		263.1
Percent of Total	56.4	55.5	56.0	57.8	58.9		
Rate of Increase		26.6	29.4	37.8	16.6	14.8	
Universities							
Amount	2,235,010	2,854,030	3,683,312	4,928,885	5,558,641		248.7
Percent of Total	38.5	38.2	38.4	38.5	38.0		
Rate of Increase		27.7	29.1	33.8	12.8	13.9	
Other 4-Year Institutions							
Amount	816,623	994,549	1,281,825	1,771,628	2,205,200		270.0
Percent of Total	14.0	13.3	13.4	13.9	15.1		
Rate of Increase		21.8	28.9	38.2	24.5	15.2	
2-Year Institutions							
Amount	225,017	298,850	403,541	697,162	858,585		381.6
Percent of Total	3.9	4.0	4.2	5.4	5.8		
Rate of Increase		32.8	35.0	72.8	23.2	21.1	
ALL PRIVATE INSTITUTIONS							
Amount	2,536,113	3,319,030	4,222,649	5,398,538	6,010,421		237.0
Percent of Total	43.6	44.5	44.0	42.2	41.1		
Rate of Increase		30.9	27.2	27.8	11.3	13.1	
Universities							
Amount	1,209,985	1,556,709	1,933,422	2,511,147	3,000,266		248.0
Percent of Total	20.8	20.8	20.1	19.6	20.5		
Rate of Increase		28.7	24.2	29.9	19.5	13.9	
Other 4-Year Institutions							
Amount	1,239,242	1,654,051	2,158,291	2,707,997	2,807,620		226.6
Percent of Total	21.3	22.2	22.5	21.2	19.2		
Rate of Increase		33.5	30.5	25.5	3.7	12.4	
2-Year Institutions							
Amount	86,886	108,270	130,936	179,394	202,535		233.1
Percent of Total	1.5	1.5	1.4	1.4	1.4		
Rate of Increase		24.6	20.9	37.0	12.9	12.9	
TOTAL—ALL INSTITUTIONS							
Amount	5,812,763	7,466,459	9,591,327	12,796,213	14,632,847		251.7
Percent of Total	100.0	100.0	100.0	100.0	100.0		
Rate of Increase		28.4	28.5	33.4	14.4	14.1	

TABLE B-4—*Total Educational and General Income by Type of Institution, Amount, Percent of Total, and Rate of Increase*

(in thousands of dollars)

Type of Institution	1959-60	1961-62	1963-64	1965-66	1966-67	Average Annual Rate of Increase	Growth Index (1959-60 =100%)
ALL PUBLIC INSTITUTIONS							
Amount	$2,689,754	$3,396,773	$4,396,865	$6,047,299	$7,134,207		265.2
Percent of Total	57.1	55.9	56.2	58.5	59.5		
Rate of Increase		26.3	29.4	37.5	17.8	15.0	
Universities							
Amount	1,861,513	2,389,179	3,080,253	4,032,033	4,635,573		249.0
Percent of Total	39.5	39.3	39.4	39.0	38.7		
Rate of Increase		28.3	28.9	30.9	15.0	13.9	
Other 4-Year Institutions							
Amount	631,852	748,927	965,329	1,380,418	1,717,881		271.9
Percent of Total	13.4	12.3	12.3	13.4	14.3		
Rate of Increase		18.5	28.9	43.0	24.4	15.4	
2-Year Institutions							
Amount	196,389	258,667	351,283	634,848	780,753		397.8
Percent of Total	4.2	4.3	4.5	6.1	6.5		
Rate of Increase		31.7	35.8	80.7	23.0	21.8	
ALL PRIVATE INSTITUTIONS							
Amount	2,022,797	2,675,442	3,433,163	4,292,871	4,851,760		239.9
Percent of Total	42.9	44.1	43.8	41.5	40.5		
Rate of Increase		32.3	28.3	25.0	13.0	13.3	
Universities							
Amount	1,030,201	1,336,098	1,669,357	2,111,977	2,581,795		250.6
Percent of Total	21.9	22.1	21.3	20.4	21.6		
Rate of Increase		29.7	24.9	26.5	22.2	14.0	
Other 4-Year Institutions							
Amount	933,593	1,264,512	1,673,435	2,057,264	2,126,227		227.7
Percent of Total	19.8	20.8	21.4	19.9	17.7		
Rate of Increase		35.4	32.3	22.9	3.4	12.5	
2-Year Institutions							
Amount	59,003	74,832	90,371	123,630	143,739		243.6
Percent of Total	1.2	1.2	1.1	1.2	1.2		
Rate of Increase		26.8	20.8	36.8	16.3	13.6	
TOTAL—ALL INSTITUTIONS							
Amount	4,712,551	6,072,215	7,830,028	10,340,170	11,985,967		254.3
Percent of Total	100.0	100.0	100.0	100.0	100.0		
Rate of Increase		28.9	28.9	32.1	15.9	14.3	

TABLE B-5—*Total Plant-Fund Receipts, Including Loans by Type of Institution, Amount, Percent of Total, and Rate of Increase*

(in thousands of dollars)

Type of Institution	1959-60	1961-62	1963-64	1965-66	1966-67	Average Annual Rate of Increase	Growth Index (1959-60 =100%)
ALL PUBLIC INSTITUTIONS							
Amount	$831,887	$1,169,279	$1,606,342	$2,351,567	$2,551,682		306.7
Percent of Total	63.4	64.2	63.4	67.4	65.4		
Rate of Increase		40.6	37.4	46.4	8.5	17.4	
Universities							
Amount	457,747	683,382	950,535	1,176,349	1,317,450		287.8
Percent of Total	34.9	37.5	37.5	33.7	33.7		
Rate of Increase		49.3	39.1	23.8	12.0	16.3	
Other 4-Year Institutions							
Amount	285,106	364,719	502,105	796,095	810,254		284.2
Percent of Total	21.7	20.0	19.8	22.8	20.8		
Rate of Increase		27.9	37.7	58.6	1.8	16.1	
2-Year Institutions							
Amount	89,034	121,178	153,702	379,123	423,973		476.2
Percent of Total	6.8	6.7	6.1	10.9	10.9		
Rate of Increase		36.1	26.8	146.7	11.8	25.0	
ALL PRIVATE INSTITUTIONS							
Amount	480,022	651,474	927,838	1,135,834	1,352,591		281.8
Percent of Total	36.6	35.8	36.6	32.6	34.6		
Rate of Increase		35.7	42.4	22.4	19.1	16.0	
Universities							
Amount	186,826	241,017	370,263	346,151	444,777		238.1
Percent of Total	14.2	13.2	14.6	9.9	11.4		
Rate of Increase		29.0	53.6	–6.5	28.5	13.2	
Other 4-Year Institutions							
Amount	277,944	391,446	518,068	739,831	843,772		303.6
Percent of Total	21.2	21.6	20.4	21.3	21.6		
Rate of Increase		40.8	32.3	42.8	14.0	17.2	
2-Year Institutions							
Amount	15,252	19,011	39,507	49,852	64,042		419.9
Percent of Total	1.2	1.0	1.6	1.4	1.6		
Rate of Increase		24.6	107.8	26.2	28.5	22.7	
TOTAL—ALL INSTITUTIONS							
Amount	1,311,909	1,820,753	2,534,180	3,487,401	3,904,273		297.6
Percent of Total	100.0	100.0	100.0	100.0	100.0		
Rate of Increase		38.8	39.2	37.6	12.0	16.9	

TABLE B-6—*Plant-Fund Receipts, Excluding Loans by Type of Institution, Amount, Percent of Total, and Rate of Increase*

(in thousands of dollars)

Type of Institution	1959-60	1961-62	1963-64	1965-66	1966-67	Average Annual Rate of Increase	Growth Index (1959-60 =100%)
ALL PUBLIC INSTITUTIONS							
Amount	$583,994	$844,408	$1,144,004	$1,343,747	$1,309,250		224.2
Percent of Total	63.7	66.3	66.3	70.9	65.4		
Rate of Increase		44.6	35.5	17.5	–2.6	12.2	
Universities							
Amount	312,230	495,906	652,957	684,481	689,078		220.7
Percent of Total	34.1	39.0	37.8	36.1	34.4		
Rate of Increase		58.8	31.7	4.8	.7	12.0	
Other 4-Year Institutions							
Amount	225,446	269,494	371,977	465,720	370,899		164.5
Percent of Total	24.6	21.1	21.6	24.6	18.5		
Rate of Increase		19.5	38.0	25.2	–20.4	7.4	
2-Year Institutions							
Amount	46,318	79,008	119,070	193,546	249,273		538.2
Percent of Total	5.0	6.2	6.9	10.2	12.5		
Rate of Increase		70.6	50.7	62.5	28.8	27.2	
ALL PRIVATE INSTITUTIONS							
Amount	332,529	428,346	581,595	552,450	693,241		208.5
Percent of Total	36.3	33.7	33.7	29.1	34.6		
Rate of Increase		28.8	35.8	–5.0	25.5	11.1	
Universities							
Amount	136,314	178,388	225,662	192,811	291,342		213.7
Percent of Total	14.9	14.0	13.1	10.2	14.5		
Rate of Increase		30.9	26.5	–14.6	51.1	11.5	
Other 4-Year Institutions							
Amount	185,069	237,421	331,469	339,256	377,977		204.2
Percent of Total	20.2	18.7	19.2	17.8	18.9		
Rate of Increase		28.3	39.6	2.3	11.4	10.7	
2-Year Institutions							
Amount	11,146	12,537	24,464	20,382	23,922		214.6
Percent of Total	1.2	1.0	1.4	1.1	1.2		
Rate of Increase		12.5	95.1	–16.7	17.4	11.5	
TOTAL—ALL INSTITUTIONS							
Amount	916,523	1,272,754	1,725,599	1,896,197	2,002,491		218.5
Percent of Total	100.0	100.0	100.0	100.0	100.0		
Rate of Increase		38.9	35.6	9.9	5.6	11.8	

TABLE B-7—*Total Plant-Fund Loan Receipts by Type of Institution, Amount, Percent of Total, and Rate of Increase*

(in thousands of dollars)

Type of Institution	1959-60	1961-62	1963-64	1965-66	1966-67	Average Annual Rate of Increase	Growth Index (1959-60 =100%)
ALL PUBLIC INSTITUTIONS							
Amount	$247,893	$324,871	$462,338	$1,007,820	$1,242,432		501.2
Percent of Total	62.7	59.3	57.2	63.3	65.3		
Rate of Increase		31.1	42.3	118.0	23.3	25.9	
Universities							
Amount	145,517	187,476	297,578	491,868	628,372		431.8
Percent of Total	36.8	34.2	36.8	30.9	33.0		
Rate of Increase		28.8	58.7	65.3	27.8	23.2	
Other 4-Year Institutions							
Amount	59,660	95,225	130,128	330,375	439,355		736.4
Percent of Total	15.1	17.4	16.1	20.8	23.1		
Rate of Increase		59.6	36.7	159.9	33.0	33.0	
2-Year Institutions							
Amount	42,716	42,170	34,632	185,577	174,705		409.0
Percent of Total	10.8	7.7	4.3	11.6	9.2		
Rate of Increase		–1.3	–17.9	435.9	–5.9	22.3	
ALL PRIVATE INSTITUTIONS							
Amount	147,493	223,128	346,243	583,384	659,350		447.0
Percent of Total	37.3	40.7	42.8	36.7	34.7		
Rate of Increase		51.3	55.2	68.5	13.0	23.9	
Universities							
Amount	50,512	62,629	144,601	153,340	153,435		303.8
Percent of Total	12.8	11.4	17.9	9.6	8.1		
Rate of Increase		24.0	130.9	6.0	.1	17.2	
Other 4-Year Institutions							
Amount	92,875	154,025	186,599	400,575	465,795		501.5
Percent of Total	23.5	28.1	23.1	25.2	24.5		
Rate of Increase		65.8	21.1	114.7	16.3	25.9	
2-Year Institutions							
Amount	4,106	6,474	15,043	29,469	40,120		977.1
Percent of Total	1.0	1.2	1.8	1.9	2.1		
Rate of Increase		57.7	132.4	95.9	36.1	38.5	
TOTAL—ALL INSTITUTIONS							
Amount	395,386	547,999	808,581	1,591,204	1,901,782		481.0
Percent of Total	100.0	100.0	100.0	100.0	100.0		
Rate of Increase		38.6	47.6	96.8	19.5	25.2	

TABLE C-1 (a)—*Total Current Fund and Plant-Fund Expenditures by Type of Institution, Amount, and Percent of Total*

(in thousands of dollars)

Type of Institution	1959–60		1961–62		1963–64		1965–66		1966–67	
	$ Amount	Percent of total	$ Amount	Percent of total	$ Amount	Percent of total	$ Amount	Percent of total	$ Amount	Percent of total
ALL PUBLIC INSTITUTIONS–TOTAL	3,893,618	57.1	4,905,327	55.9	6,533,493	56.7	9,194,176	58.3	11,162,075	60.3
Educ. & Gen., Excl. Research	(2,075,690)	(30.5)	(2,523,553)	(28.7)	(3,263,869)	(28.3)	(4,645,609)	(29.4)	(5,576,887)	(30.1)
Research	(524,541)	(7.7)	(733,446)	(8.4)	(935,906)	(8.1)	(1,149,643)	(7.3)	(1,219,218)	(6.6)
Other Current Fund Expenditures	(554,107)	(8.1)	(710,559)	(8.1)	(914,721)	(8.0)	(1,319,450)	(8.4)	(1,565,352)	(8.5)
Plant-Fund Expenditures	(739,280)	(10.8)	(937,769)	(10.7)	(1,418,997)	(12.3)	(2,079,474)	(13.2)	(2,800,618)	(15.1)
Universities–Total	2,597,886	38.1	3,312,223	37.7	4,367,789	37.9	5,947,693	37.7	6,968,703	37.6
Educ. & Gen., Excl. Research	(1,298,950)	(19.0)	(1,593,326)	(18.2)	(2,059,839)	(17.9)	(2,841,492)	(18.0)	(3,317,808)	(17.9)
Research	(506,359)	(7.4)	(706,640)	(8.0)	(898,523)	(7.8)	(1,101,027)	(7.0)	(1,161,407)	(6.3)
Other Current Fund Expenditures	(358,055)	(5.3)	(449,139)	(5.1)	(584,322)	(5.0)	(833,820)	(5.3)	(966,053)	(5.2)
Plant-Fund Expenditures	(434,522)	(6.4)	(563,118)	(6.4)	(825,105)	(7.2)	(1,171,354)	(7.4)	(1,523,435)	(8.2)
Other 4-Year–Total	1,010,719	14.8	1,228,560	14.0	1,661,449	14.4	2,344,916	14.9	3,015,657	16.3
Educ. & Gen., Excl. Research	(591,923)	(8.7)	(696,507)	(8.0)	(889,043)	(7.7)	(1,246,309)	(7.9)	(1,565,255)	(8.5)
Research	(18,161)	(.2)	(26,798)	(.3)	(37,321)	(.3)	(48,352)	(.3)	(57,486)	(.3)
Other Current Fund Expenditures	(168,987)	(2.5)	(222,773)	(2.5)	(281,081)	(2.4)	(389,597)	(2.5)	(481,977)	(2.6)
Plant-Fund Expenditures	(231,648)	(3.4)	(282,482)	(3.2)	(454,004)	(4.0)	(660,658)	(4.2)	(910,939)	(4.9)
2-Year–Total	285,013	4.2	364,544	4.2	503,685	4.4	901,567	5.7	1,177,715	6.4
Educ. & Gen., Excl. Research	(184,817)	(2.7)	(233,720)	(2.7)	(314,987)	(2.8)	(557,808)	(3.5)	(693,824)	(3.8)
Research	(21)	(0.0)	(8)	(0.0)	(62)	(0.0)	(264)	(0.0)	(325)	(0.0)
Other Current Fund Expenditures	(27,065)	(.4)	(38,647)	(.4)	(49,318)	(.4)	(96,033)	(.6)	(117,322)	(.6)
Plant-Fund Expenditures	(73,110)	(1.1)	(92,169)	(1.1)	(139,888)	(1.2)	(247,462)	(1.6)	(366,244)	(2.0)
ALL PRIVATE INSTITUTIONS–TOTAL	2,930,029	42.9	3,871,220	44.1	4,986,575	43.3	6,592,571	41.8	7,347,367	39.7
Educ. & Gen., Excl. Research	(1,435,966)	(21.0)	(1,793,196)	(20.4)	(2,219,631)	(19.3)	(2,905,406)	(18.4)	(3,312,053)	(17.9)
Research	(499,857)	(7.3)	(747,932)	(8.5)	(1,046,987)	(9.1)	(1,303,339)	(8.3)	(1,301,819)	(7.0)
Other Current Fund Expenditures	(537,797)	(7.9)	(681,394)	(7.8)	(843,880)	(7.3)	(1,246,496)	(7.9)	(1,326,577)	(7.2)
Plant-Fund Expenditures	(456,409)	(6.7)	(648,698)	(7.4)	(876,077)	(7.6)	(1,137,330)	(7.2)	(1,406,918)	(7.6)
Universities–Total	1,358,818	19.9	1,774,028	20.2	2,266,014	19.7	3,004,283	19.0	3,513,521	19.0
Educ. & Gen., Excl. Research	(638,031)	(9.4)	(802,236)	(9.1)	(981,449)	(8.5)	(1,328,072)	(8.4)	(1,524,850)	(8.2)
Research	(341,041)	(5.0)	(459,335)	(5.2)	(599,638)	(5.2)	(825,452)	(5.2)	(956,760)	(5.2)
Other Current Fund Expenditures	(206,527)	(3.0)	(260,192)	(3.0)	(311,037)	(2.7)	(462,038)	(2.9)	(516,047)	(2.8)
Plant-Fund Expenditures	(173,219)	(2.5)	(252,265)	(2.9)	(373,890)	(3.3)	(388,721)	(2.5)	(515,864)	(2.8)
Other 4-Year–Total	1,475,031	21.6	1,979,208	22.6	2,563,183	22.2	3,372,317	21.4	3,577,837	19.3
Educ. & Gen., Excl. Research	(739,183)	(10.9)	(919,155)	(10.5)	(1,151,977)	(10.0)	(1,462,565)	(9.4)	(1,653,719)	(8.9)
Research	(158,290)	(2.3)	(287,873)	(3.3)	(445,879)	(3.9)	(476,836)	(3.0)	(343,982)	(1.8)
Other Current Fund Expenditures	(309,203)	(4.5)	(394,120)	(4.5)	(499,036)	(4.3)	(732,863)	(4.6)	(753,923)	(4.1)
Plant-Fund Expenditures	(268,355)	(3.9)	(378,060)	(4.3)	(466,291)	(4.0)	(700,053)	(4.4)	(826,213)	(4.5)
2-Year–Total	96,180	1.4	117,984	1.3	157,378	1.4	215,971	1.4	256,009	1.4
Educ. & Gen., Excl. Research	(58,752)	(.9)	(71,805)	(.8)	(86,205)	(.8)	(114,769)	(.7)	(133,484)	(.7)
Research	(526)	(0.0)	(724)	(0.0)	(1,470)	(0.0)	(1,051)	(0.0)	(1,077)	(0.0)
Other Current Fund Expenditures	(22,067)	(.3)	(27,082)	(.3)	(33,807)	(.3)	(51,595)	(.3)	(56,607)	(.3)
Plant-Fund Expenditures	(14,835)	(.2)	(18,373)	(.2)	(35,896)	(.3)	(48,556)	(.3)	(64,841)	(.4)
ALL INSTITUTIONS–TOTAL	6,823,647	100.0	8,776,547	100.0	11,520,068	100.0	15,786,747	100.0	18,509,442	100.0
Educ. & Gen., Excl. Research	(3,511,656)	(51.5)	(4,316,749)	(49.2)	(5,483,500)	(47.6)	(7,551,015)	(47.8)	(8,888,940)	(48.0)
Research	(1,024,398)	(15.0)	(1,481,378)	(16.9)	(1,982,893)	(17.2)	(2,452,982)	(15.5)	(2,521,037)	(13.6)
Other Current Fund Expenditures	(1,091,904)	(16.0)	(1,391,953)	(15.8)	(1,758,601)	(15.3)	(2,565,946)	(16.3)	(2,891,929)	(15.6)
Plant-Fund Expenditures	(1,195,689)	(17.5)	(1,586,467)	(18.1)	(2,295,074)	(19.9)	(3,216,804)	(20.4)	(4,207,536)	(22.8)

TABLE C-1 (b) —*Rate of Increase of Institutional Expenditures by Type of Institution*

Type of Institution	1959–60	1961–62	1963–64	1965–66	1966–67	Average Annual Rate of Increase	Growth Index (1959–60 = 100%)
ALL PUBLIC INSTITUTIONS—TOTAL		26.0	33.2	40.7	21.4	16.2	286.7
Educ. & Gen., Excl. Research		21.6	29.3	42.3	20.0	15.2	268.7
Research		39.8	27.6	22.8	6.1	12.8	232.4
Other Current Fund Expenditures		28.2	28.7	44.2	18.6	16.0	282.5
Plant-Fund Expenditures		26.8	51.3	46.5	34.7	21.0	378.8
Universities—Total		27.5	31.9	36.2	17.2	15.1	268.2
Educ. & Gen., Excl. Research		22.7	29.3	37.9	16.8	14.3	255.4
Research		39.6	27.2	22.5	5.5	12.6	229.4
Other Current Fund Expenditures		25.4	30.1	42.7	15.9	15.2	269.8
Plant-Fund Expenditures		29.6	46.5	42.0	13.0	19.6	350.6
Other 4-Year—Total		21.6	35.2	41.1	28.6	16.9	298.4
Educ. & Gen., Excl. Research		17.6	27.6	40.2	25.6	14.9	264.4
Research		47.6	39.3	29.6	18.9	17.9	316.5
Other Current Fund Expenditures		31.8	26.2	38.6	23.7	16.2	285.2
Plant-Fund Expenditures		21.9	60.7	45.5	37.9	21.6	393.2
2-Year—Total		27.9	38.2	79.0	30.6	22.5	413.2
Educ. & Gen., Excl. Research		26.5	34.8	77.1	24.4	20.8	375.4
Research		–61.9	675.0	325.8	23.1	48.0	1,547.6
Other Current Fund Expenditures		42.8	27.6	94.7	22.2	23.3	433.5
Plant-Fund Expenditures		26.1	51.8	76.9	48.0	25.9	500.9
ALL PRIVATE INSTITUTIONS—TOTAL		32.1	28.8	32.2	11.4	14.0	250.8
Educ. & Gen., Excl. Research		24.9	23.8	30.9	14.0	12.7	230.6
Research		49.6	40.0	24.5	–0.1	14.7	260.4
Other Current Fund Expenditures		26.7	23.8	47.7	6.4	13.8	246.7
Plant-Fund Expenditures		42.1	35.1	29.8	23.7	17.4	308.3
Universities—Total		30.6	27.7	32.6	17.0	14.5	258.6
Educ. & Gen., Excl. Research		25.7	22.3	35.3	14.8	13.3	239.0
Research		34.7	30.5	37.7	15.9	15.9	280.5
Other Current Fund Expenditures		26.0	19.5	48.5	11.7	14.0	249.9
Plant-Fund Expenditures		45.6	48.2	4.0	32.7	16.9	297.8
Other 4-Year—Total		34.2	29.5	31.6	6.1	13.5	242.6
Educ. & Gen., Excl. Research		24.3	25.3	27.0	13.1	12.2	223.7
Research		81.9	54.9	6.9	–27.9	11.7	217.3
Other Current Fund Expenditures		27.5	26.6	46.9	2.9	13.6	243.8
Plant-Fund Expenditures		40.9	23.3	50.1	18.0	17.4	319.8
2-Year—Total		22.7	33.4	37.2	18.5	15.0	266.2
Educ. & Gen., Excl. Research		22.2	20.1	33.1	16.3	12.4	227.2
Research		37.6	103.0	–28.5	2.5	10.8	204.8
Other Current Fund Expenditures		22.7	24.8	52.6	9.7	14.4	256.5
Plant-Fund Expenditures		23.8	95.4	35.3	33.5	23.5	437.1
ALL INSTITUTIONS—TOTAL		28.6	31.3	37.0	17.2	15.3	271.3
Educ. & Gen., Excl. Research		22.9	27.0	37.7	17.7	14.2	253.1
Research		44.6	33.9	23.7	2.8	13.7	219.7
Other Current Fund Expenditures		27.5	26.3	45.9	12.7	14.9	264.9
Plant-Fund Expenditures		32.7	44.7	40.2	30.8	19.7	351.9

TABLE C-2—*Total Current-Fund Expenditures by Type of Institution, Amount, Percent of Total, and Rate of Increase*

(in thousands of dollars)

Type of Institution	1959-60	1961-62	1963-64	1965-66	1966-67	Average Annual Rate of Increase	Growth Index (1959-60 =100%)
ALL PUBLIC INSTITUTIONS							
Amount	$3,154,338	$3,967,558	$5,114,490	$7,114,702	$8,361,457		265.1
Percent of Total	56.0	55.2	55.4	56.6	58.5		
Rate of Increase		25.8	28.9	39.1	17.5	14.9	
Universities							
Amount	2,163,364	2,749,105	3,542,684	4,776,339	5,445,268		251.7
Percent of Total	38.4	38.2	38.4	38.0	38.1		
Rate of Increase		27.1	28.9	34.8	14.0	14.1	
Other 4-Year Institutions							
Amount	779,071	946,078	1,207,445	1,684,258	2,104,718		270.2
Percent of Total	13.8	13.2	13.1	13.4	14.7		
Rate of Increase		21.4	27.6	39.5	25.0	15.3	
2-Year Institutions							
Amount	211,903	272,375	364,367	654,105	811,471		382.9
Percent of Total	3.8	3.8	3.9	5.2	5.7		
Rate of Increase		28.5	33.8	79.5	24.1	21.1	
ALL PRIVATE INSTITUTIONS							
Amount	2,473,620	3,222,522	4,110,498	5,455,241	5,940,449		240.2
Percent of Total	44.0	44.8	44.6	43.4	41.5		
Rate of Increase		30.3	27.6	32.7	8.9	13.3	
Universities							
Amount	1,185,599	1,521,763	1,892,124	2,615,562	2,997,657		252.8
Percent of Total	21.1	21.2	20.5	20.8	21.0		
Rate of Increase		28.4	24.3	38.2	14.6	14.2	
Other 4-Year Institutions							
Amount	1,206,676	1,601,148	2,096,892	2,672,264	2,751,624		228.0
Percent of Total	21.5	22.2	22.8	21.3	19.2		
Rate of Increase		32.7	31.0	27.4	3.0	12.5	
2-Year Institutions							
Amount	81,345	99,611	121,482	167,415	191,168		235.0
Percent of Total	1.4	1.4	1.3	1.3	1.3		
Rate of Increase		22.5	22.0	37.8	14.2	13.0	
TOTAL—ALL INSTITUTIONS							
Amount	5,627,958	7,190,080	9,224,994	12,569,943	14,301,906		254.1
Percent of Total	100.0	100.0	100.0	100.0	100.0		
Rate of Increase		27.8	28.3	36.3	13.8	14.3	

1430

TABLE C-3—*Total Educational and General Expenditures by Type of Institution: Amount, Percent of Total, and Rate of Increase*

(in thousands of dollars)

Type of Institution	1959-60	1961-62	1963-64	1965-66	1966-67	Average Annual Rate of Increase	Growth Index (1959-60 =100%)
ALL PUBLIC INSTITUTIONS							
Amount	$2,600,231	$3,256,999	$4,199,775	$5,795,252	$6,796,105		261.4
Percent of Total	57.3	56.2	56.2	57.9	59.6		
Rate of Increase		25.3	28.9	38.0	17.3	14.7	
Universities							
Amount	1,805,309	2,299,966	2,958,362	3,942,519	4,479,215		248.1
Percent of Total	39.8	39.7	39.6	39.4	39.3		
Rate of Increase		27.4	28.6	33.3	13.6	13.9	
Other 4-Year Institutions							
Amount	610,084	723,305	926,364	1,294,661	1,622,741		266.0
Percent of Total	13.4	12.5	12.4	12.9	14.2		
Rate of Increase		18.6	28.1	39.8	25.3	15.0	
2-Year Institutions							
Amount	184,838	233,728	315,049	558,072	694,149		375.5
Percent of Total	4.1	4.0	4.2	5.6	6.1		
Rate of Increase		26.5	34.8	77.1	24.4	20.8	
ALL PRIVATE INSTITUTIONS							
Amount	1,935,823	2,541,128	3,266,618	4,208,745	4,613,872		238.3
Percent of Total	42.7	43.8	43.8	42.1	40.4		
Rate of Increase		31.3	28.5	28.8	9.6	13.2	
Universities							
Amount	979,072	1,261,571	1,581,087	2,153,524	2,481,610		253.5
Percent of Total	21.6	21.7	21.2	21.5	21.7		
Rate of Increase		28.8	25.3	36.2	15.2	14.2	
Other 4-Year Institutions							
Amount	897,473	1,207,028	1,597,856	1,939,401	1,997,701		222.6
Percent of Total	19.8	20.8	21.4	19.4	17.5		
Rate of Increase		34.5	32.4	21.4	3.0	12.1	
2-Year Institutions							
Amount	59,278	72,529	87,675	115,820	134,561		227.0
Percent of Total	1.3	1.3	1.2	1.2	1.2		
Rate of Increase		22.4	20.9	32.1	16.2	12.4	
TOTAL—ALL INSTITUTIONS							
Amount	4,536,054	5,798,127	7,466,393	10,003,997	11,409,977		251.5
Percent of Total	100.0	100.0	100.0	100.0	100.0		
Rate of Increase		27.8	28.8	34.0	14.1	14.1	

TABLE D-1—*Tuition and Fees Income by Type of Institution, Amount, Percent of Total, and Rate of Increase*

(in thousands of dollars)

Type of Institution	1959-60	1961-62	1963-64	1965-66	1966-67	Average Annual Rate of Increase	Growth Index (1959-60 =100%)
ALL PUBLIC INSTITUTIONS							
Amount	$331,956	$429,731	$582,866	$854,459	$997,419		300.5
Percent of Total	28.6	28.6	30.7	31.8	33.5		
Rate of Increase		29.2	35.6	46.6	16.7	17.0	
Universities							
Amount	211,263	267,483	368,800	509,413	581,226		275.1
Percent of Total	18.2	17.8	19.4	19.0	19.5		
Rate of Increase		26.6	37.8	38.1	14.1	15.6	
Other 4-Year Institutions							
Amount	96,812	127,966	166,295	252,842	299,883		309.8
Percent of Total	8.3	8.5	8.8	9.4	10.1		
Rate of Increase		32.2	30.0	52.0	18.6	17.5	
2-Year Institutions							
Amount	23,881	34,282	47,771	92,204	116,310		487.0
Percent of Total	2.1	2.3	2.5	3.4	3.9		
Rate of Increase		43.6	39.3	93.0	26.1	25.4	
ALL PRIVATE INSTITUTIONS							
Amount	829,795	1,075,597	1,316,588	1,825,149	1,985,050		239.2
Percent of Total	71.4	71.4	69.3	68.2	66.5		
Rate of Increase		29.6	22.4	38.6	8.8	13.3	
Universities							
Amount	338,957	428,954	495,806	686,007	742,663		219.1
Percent of Total	29.2	28.5	26.1	25.6	24.9		
Rate of Increase		26.6	15.6	38.4	8.3	11.9	
Other 4-Year Institutions							
Amount	449,083	590,419	755,428	1,046,460	1,136,547		253.1
Percent of Total	38.6	39.2	39.8	39.1	38.1		
Rate of Increase		31.5	27.9	38.5	8.6	14.2	
2-Year Institutions							
Amount	41,756	56,224	65,354	92,682	105,840		253.5
Percent of Total	3.6	3.7	3.4	3.5	3.5		
Rate of Increase		34.6	16.2	41.8	14.2	14.2	
TOTAL—ALL INSTITUTIONS							
Amount	1,161,752	1,505,328	1,899,454	2,679,608	2,982,469		256.7
Percent of Total	100.0	100.0	100.0	100.0	100.0		
Rate of Increase		29.6	26.2	41.1	11.3	14.4	

TABLE D-2 (a) —*Distribution of State Support by Type of Institution, Amount, and Percent of Total*

(in thousands of dollars)

Type of Institution	1959–60		1961–62		1963–64		1965–66		1966–67	
	$ Amount	Percent of total	$ Amount	Percent of total	$ Amount	Percent of total	$ Amount	Percent of total	$ Amount	Percent of total
ALL PUBLIC INSTITUTIONS										
Total State Support	1,663,132	97.5	2,144,144	97.4	2,638,495	97.9	3,659,872	97.6	3,908,873	97.4
Educational & General	(1,349,399)	(79.1)	(1,636,057)	(74.3)	(2,008,613)	(74.5)	(2,926,795)	(78.1)	(3,286,512)	(81.9)
Plant-Fund Receipts	(313,733)	(18.4)	(508,087)	(23.1)	(629,882)	(23.4)	(733,077)	(19.5)	(622,361)	(15.5)
Universities										
Total State Support	1,035,242	60.7	1,380,928	62.7	1,648,689	61.1	2,265,062	60.4	2,292,483	57.1
Educational & General	(891,871)	(52.3)	(1,092,220)	(49.6)	(1,305,344)	(48.4)	(1,844,843)	(49.2)	(1,974,760)	(49.2)
Plant-Fund Receipts	(143,371)	(8.4)	(288,708)	(13.1)	(343,345)	(12.7)	(420,219)	(11.2)	(317,723)	(7.9)
Other 4-Year Institutions										
Total State Support	549,865	32.2	655,721	29.8	829,012	30.8	1,074,539	28.6	1,251,615	31.2
Educational & General	(391,710)	(23.0)	(456,151)	(20.7)	(581,979)	(21.6)	(843,520)	(22.5)	(1,021,152)	(25.5)
Plant-Fund Receipts	(158,155)	(9.2)	(199,570)	(9.1)	(247,033)	(9.2)	(231,019)	(6.1)	(230,463)	(5.7)
2-Year Institutions										
Total State Support	78,025	4.6	107,495	4.9	160,794	6.0	320,971	8.6	364,775	9.1
Educational & General	(65,818)	(3.9)	(87,686)	(4.0)	(121,290)	(4.5)	(239,132)	(6.4)	(290,600)	(7.2)
Plant-Fund Receipts	(12,207)	(.7)	(19,809)	(.9)	(39,504)	(1.5)	(81,839)	(2.2)	(74,175)	(1.9)
ALL PRIVATE INSTITUTIONS										
Total State Support	42,735	2.5	56,190	2.6	56,795	2.1	90,872	2.4	102,330	2.6
Educational & General	(36,066)	(2.1)	(48,379)	(2.2)	(54,576)	(2.0)	(85,210)	(2.3)	(85,516)	(2.2)
Plant-Fund Receipts	(6,669)	(.4)	(7,811)	(.4)	(2,219)	(.1)	(5,662)	(.1)	(16,814)	(.4)
Universities										
Total State Support	36,025	2.1	47,560	2.2	46,032	1.7	74,896	2.0	86,770	2.2
Educational & General	(29,614)	(1.7)	(40,548)	(1.9)	(44,730)	(1.7)	(71,608)	(1.9)	(71,818)	(1.8)
Plant-Fund Receipts	(6,411)	(.4)	(7,012)	(.3)	(1,302)	(0.0)	(3,288)	(.1)	(14,952)	(.4)
Other 4-Year Institutions										
Total State Support	6,672	.4	8481	.4	10,601	.4	15,516	.4	15,012	.4
Educational & General	(6.414)	(.4)	(7,682)	(.4)	(9,684)	(.4)	(13,145)	(.3)	(13,321)	(.3)
Plant-Fund Receipts	(258)	(0.0)	(799)	(0.0)	(917)	(0.0)	(2,371)	(.1)	(1,691)	(.1)
2-Year Institutions										
Total State Support	38	0.0	149	0.0	162	0.0	460	0.0	548	0.0
Educational & General	(38)	(0.0)	(149)	(0.0)	(162)	(0.0)	(457)	(0.0)	(377)	(0.0)
Plant-Fund Receipts	(0.0)	(0.0)	(0)	(0.0)	(0)	(0.0)	(3)	(0.0)	(171)	(0.0)
TOTAL-ALL INSTITUTIONS										
Total State Support	1,705,867	100.0	2,200,384	100.0	2,695,290	100.0	3,750,744	100.0	4,011,203	100.0
Educational & General	(1,385,465)	(81.2)	(1,684,436)	(76.6)	(2,063,189)	(76.5)	(3,012,005)	(80.3)	(3,372,028)	(84.1)
Plant-Fund Receipts	(320,402)	(18.8)	(515,898)	(23.4)	(632,101)	(23.5)	(738,739)	(19.7)	(639,175)	(15.9)

TABLE D-2 (b) —*Rate of Increase of State Support by Type of Institution*

Type of Institution	Rate of Increase 1959–60	1961–62	1963–64	1965–66	1966–67	Average Annual Rate of Increase	Growth Index (1959–60 = 100%)
ALL PUBLIC INSTITUTIONS							
Total State Support		28.9	23.1	38.7	6.8	13.0	235.0
Educational & General		21.2	22.8	45.7	12.3	13.6	243.6
Plant-Fund Receipts		61.9	24.0	16.4	−15.1	10.3	198.4
Universities							
Total State Support		33.4	19.4	37.4	1.2	12.0	221.4
Educational & General		22.5	19.5	41.3	7.0	12.0	221.4
Plant-Fund Receipts		1.4	18.9	22.4	−24.4	12.0	221.6
Other 4-Year Institutions							
Total State Support		19.3	26.4	29.6	16.5	12.5	227.6
Educational & General		16.5	27.6	44.9	21.1	14.7	260.7
Plant-Fund Receipts		26.2	23.8	−6.5	−.2	5.5	145.7
2-Year Institutions							
Total State Support		37.8	49.6	99.6	13.6	24.6	467.5
Educational & General		33.2	38.3	97.2	21.5	23.6	441.5
Plant-Fund Receipts		62.3	99.4	107.2	−9.4	29.4	607.6
ALL PRIVATE INSTITUTIONS							
Total State Support		31.5	1.1	60.0	12.6	13.3	239.5
Educational & General		34.1	12.8	56.1	.4	13.1	237.1
Plant-Fund Receipts		17.1	−71.6	155.2	197.0	14.1	252.1
Universities							
Total State Support		32.0	−3.2	62.7	15.9	13.4	240.9
Educational & General		36.9	10.3	60.1	.3	13.5	239.1
Plant-Fund Receipts		9.4	−81.4	152.5	354.7	12.9	233.2
Other 4-Year Institutions							
Total State Support		27.1	25.0	46.4	−3.2	12.3	225.0
Educational & General		19.8	26.1	35.7	1.3	11.0	207.7
Plant-Fund Receipts		209.7	14.8	158.6	−28.7	30.8	655.4
2-Year Institutions							
Total State Support		292.1	8.7	184.0	19.1	46.4	1,442.1
Educational & General		292.1	8.7	182.1	−17.5	38.8	992.1
Plant-Fund Receipts		0	0	0	5,600.0	—	—
TOTAL-ALL INSTITUTIONS							
Total State Support		29.0	22.5	39.2	6.9	13.0	235.1
Educational & General		21.6	22.5	46.0	12.0	13.5	243.4
Plant-Fund Receipts		61.0	22.5	16.9	−13.5	10.4	199.5

Table D-3—*Support From Local Governments by Type of Institution, Amount, Percent of Total, and Rate of Increase*

(in thousands of dollars)

Type of Institution	1959–60	1961–62	1963–64	1965–66	1966–67	Average Annual Rate of Increase	Growth Index (1959–60 = 100%)
ALL PUBLIC INSTITUTIONS							
Amount	$183,558	$219,520	$292,798	$390,771	$503,571		274.3
Percent of Total	97.6	96.8	96.6	97.9	95.2		
Rate of Increase		19.6	33.4	33.5	28.9	15.5	
Universities							
Amount	35,214	39,318	47,374	29,870	53,978		153.3
Percent of Total	18.8	17.3	15.6	7.5	10.2		
Rate of Increase		11.7	20.5	−37.0	80.7	6.3	
Other 4-Year Institutions							
Amount	30,364	23,995	36,097	56,136	53,349		175.7
Percent of Total	16.1	10.6	11.9	14.1	10.1		
Rate of Increase		−21.0	50.4	55.5	−5.0	8.4	
2-Year Institutions							
Amount	117,980	156,207	209,327	304,765	396,244		335.9
Percent of Total	62.7	68.9	69.1	76.3	74.9		
Rate of Increase		32.4	34.0	45.6	30.0	18.9	
ALL PRIVATE INSTITUTIONS							
Amount	4,461	7,163	10,251	8,525	25,491		571.4
Percent of Total	2.4	3.2	3.4	2.1	4.8		
Rate of Increase		60.6	43.1	−16.8	199.0	28.3	
Universities							
Amount	2,801	3,791	8,140	5,366	22,278		796.4
Percent of Total	1.5	1.7	2.7	1.3	4.2		
Rate of Increase		35.3	114.7	−34.1	315.2	34.5	
Other 4-Year Institutions							
Amount	1,552	3,317	2,048	3,159	2,351		151.5
Percent of Total	0.8	1.5	0.7	0.8	0.4		
Rate of Increase		113.7	−38.3	54.2	−25.6	6.1	
2-Year Institutions							
Amount	108	55	63	0	862		798.1
Percent of Total	0.1	0.0	0.0	0.0	0.2		
Rate of Increase		−49.1	14.5	—	—	34.5	
TOTAL—ALL INSTITUTIONS							
Amount	188,019	226,683	303,049	399,296	529,062		281.4
Percent of Total	100.0	100.0	100.0	100.0	100.0		
Rate of Increase		20.6	33.7	31.8	32.5	15.9	

TABLE D-4 (a) —*Distribution of Federal Support by Type of Institution, Amount, and Percent of Total*

(in thousands of dollars)

Type of Institution	1959–60		1961–62		1963–64		1965–66		1966–67	
	$ Amount	Percent of total	$ Amount	Percent of total	$ Amount	Percent of total	$ Amount	Percent of total	$ Amount	Percent of total
ALL PUBLIC INSTITUTIONS										
Total Federal Support	598,682	54.3	820,056	50.7	1,216,015	51.2	1,629,571	54.4	1,775,433	53.0
Research	(363,514)	(33.0)	(547,972)	(33.9)	(754,450)	(31.8)	(894,838)	(29.9)	(972,733)	(29.0)
Other Educational & General	(186,649)	(16.9)	(227,544)	(14.1)	(368,453)	(15.5)	(473,357)	(15.8)	(612,329)	(18.3)
Plant-Fund Receipts	(48,519)	(4.4)	(44,540)	(2.7)	(93,112)	(3.9)	(261,376)	(8.7)	(190,371)	(5.7)
Universities										
Total Federal Support	475,430	43.1	686,729	42.5	1,020,974	43.0	1,230,217	41.1	1,398,991	41.8
Research	(350,212)	(31.8)	(524,091)	(32.4)	(720,726)	(30.3)	(856,586)	(28.6)	(924,847)	(27.7)
Other Educational & General	(107,650)	(9.7)	(139,830)	(8.7)	(243,586)	(10.3)	(302,771)	(10.1)	(369,516)	(11.0)
Plant-Fund Receipts	(17,568)	(1.6)	(22,808)	(1.4)	(56,662)	(2.4)	(70,860)	(2.4)	(104,628)	(3.1)
Other 4-Year Institutions										
Total Federal Support	119,542	10.9	128,682	8.0	180,333	7.6	345,742	11.5	291,770	8.7
Research	(13,272)	(1.2)	(23,852)	(1.5)	(33,701)	(1.4)	(37,911)	(1.3)	(47,652)	(1.4)
Other Educational & General	(75,589)	(6.9)	(83,978)	(5.2)	(112,035)	(4.7)	(142,548)	(4.7)	(199,773)	(6.0)
Plant-Fund Receipts	(30,681)	(2.8)	(20,852)	(1.3)	(34,597)	(1.5)	(165,283)	(5.5)	(44,345)	(1.3)
2-Year Institutions										
Total Federal Support	3,710	.3	4,645	0.2	14,708	.6	53,612	1.8	84,672	2.5
Research	(30)	(0.0)	(29)	(0.0)	(23)	(0.0)	(341)	(0.0)	(234)	(0.0)
Other Educational & General	(3,410)	(.3)	(3,736)	(.2)	(12,832)	(.5)	(28,038)	(.9)	(43,040)	(1.3)
Plant-Fund Receipts	(270)	(0.0)	(880)	(0.0)	(1,853)	(.1)	(25,233)	(.9)	(41,398)	(1.2)
ALL PRIVATE INSTITUTIONS										
Total Federal Support	503,625	45.7	797,151	49.3	1,159,424	48.8	1,368,071	45.6	1,574,951	47.0
Research	(465,221)	(42.2)	(726,391)	(45.0)	(1,042,645)	(43.9)	(1,142,929)	(38.1)	(1,245,328)	(37.2)
Other Educational & General	(29,324)	(2.7)	(44,798)	(2.7)	(75,676)	(3.2)	(152,851)	(5.1)	(230,892)	(6.9)
Plant-Fund Receipts	(9,080)	(.8)	(25,962)	(1.6)	(41,103)	(1.7)	(72,291)	(2.4)	(98,731)	(2.9)
Universities										
Total Federal Support	332,757	30.2	483,190	29.9	676,481	28.5	828,697	27.6	1,113,222	33.2
Research	(305,032)	(27.7)	(434,556)	(26.9)	(587,901)	(24.8)	(678,572)	(22.6)	(906,421)	(27.0)
Other Educational & General	(22,845)	(2.1)	(35,330)	(2.2)	(62,039)	(2.6)	(114,137)	(3.8)	(156,358)	(4.7)
Plant-Fund Receipts	(4,880)	(.4)	(13,304)	(.8)	(26,541)	(1.1)	(35,988)	(1.2)	(50,443)	(1.5)
Other 4-Year Institutions										
Total Federal Support	169,851	15.4	312,765	19.3	480,973	20.2	535,202	17.9	453,150	13.5
Research	(159,457)	(14.5)	(290,993)	(18.0)	(453,072)	(19.1)	(463,057)	(15.5)	(337,386)	(10.1)
Other Educational & General	(6,194)	(.5)	(9,145)	(.5)	(13,346)	(.5)	(36,647)	(1.2)	(70,149)	(2.1)
Plant-Fund Receipts	(4,200)	(.4)	(12,627)	(.8)	(14,555)	(.6)	(35,498)	(1.2)	(45,615)	(1.3)
2-Year Institutions										
Total Federal Support	1,017	.1	1,196	.1	1,970	.1	4,172	.1	8,579	.3
Research	(732)	(.1)	(842)	(.1)	(1,672)	(.1)	(1,300)	(0.0)	(1,521)	(0.0)
Other Educational & General	(285)	(0.0)	(323)	(0.0)	(291)	(0.0)	(2,067)	(.1)	(4,385)	(.2)
Plant-Fund Receipts	(0)	(0.0)	(31)	(0.0)	(7)	(0.0)	(805)	(0.0)	(2,673)	(.1)
TOTAL—ALL INSTITUTIONS										
Total Federal Support	1,102,307	100.0	1,617,207	100.0	2,375,439	100.0	2,997,642	100.0	3,350,384	100.0
Research	(828,735)	(75.2)	(1,274,363)	(78.8)	(1,797,095)	(75.6)	(2,037,767)	(68.0)	(2,218,061)	(66.2)
Other Educational & General	(215,973)	(19.6)	(272,342)	(16.8)	(444,129)	(18.7)	(626,208)	(20.9)	(843,221)	(25.2)
Plant-Fund Receipts	(57,599)	(5.2)	(70,502)	(4.4)	(134,215)	(5.7)	(333,667)	(11.1)	(289,102)	(8.6)

TABLE D-4 (b) —*Rate of Increase of Federal Support by Type of Institution*

Type of Institution	1959–60	1961–62	1963–64	1965–66	1966–67	Average Annual Rate of Increase	Growth Index (1959–60 = 100%)
ALL PUBLIC INSTITUTIONS							
Total Federal Support		37.0	48.3	34.0	9.0	16.8	296.6
Research		50.7	37.7	18.6	8.7	15.1	267.6
Other Educational & General		21.9	61.9	28.5	29.4	18.5	328.1
Plant-Fund Receipts		–8.2	109.1	180.7	–27.2	21.6	392.4
Universities							
Total Federal Support		44.4	48.7	20.5	13.7	16.7	294.3
Research		49.6	37.5	18.9	7.8	14.9	264.1
Other Educational & General		29.9	74.2	24.3	22.0	19.3	343.3
Plant-Fund Receipts		29.8	148.4	25.1	47.7	29.0	595.6
Other 4-Year Institutions							
Total Federal Support		7.6	40.1	91.7	–15.6	13.6	244.1
Research		79.7	41.3	12.5	25.7	20.0	359.0
Other Educational & General		11.1	33.4	27.2	77.0	15.0	264.3
Plant-Fund Receipts		–32.0	65.9	377.7	–73.2	5.4	144.5
2-Year Institutions							
Total Federal Support		25.2	316.6	364.5	57.9	56.3	2,282.3
Research		–3.3	–20.7	1,382.6	–31.4	34.1	780.0
Other Educational & General		9.6	243.5	118.5	53.5	43.6	1,262.2
Plant-Fund Receipts		255.9	110.6	1,261.7	64.1	105.2	15,332.6
ALL PRIVATE INSTITUTIONS							
Total Federal Support		58.3	45.4	18.0	15.1	17.7	312.7
Research		56.1	43.5	9.6	9.0	15.1	267.7
Other Educational & General		52.8	68.9	102.0	51.1	34.3	787.4
Plant-Fund Receipts		185.9	58.3	75.9	36.6	40.6	1,087.3
Universities							
Total Federal Support		45.2	40.0	22.5	34.3	18.8	334.5
Research		42.5	35.3	15.4	33.6	16.8	297.2
Other Educational & General		54.7	75.6	84.0	37.0	31.6	684.4
Plant-Fund Receipts		172.6	99.5	35.6	40.2	39.6	1,033.7
Other 4-Year Institutions							
Total Federal Support		84.1	53.8	11.3	–15.3	15.0	266.8
Research		82.5	55.7	2.2	–27.1	11.3	211.6
Other Educational & General		47.6	45.9	174.6	91.4	41.4	1,132.5
Plant-Fund Receipts		200.6	15.3	143.9	28.5	40.6	1,086.1
2-Year Institutions							
Total Federal Support		17.6	64.7	111.8	105.6	35.6	843.6
Research		15.0	98.6	–22.3	17.0	11.0	207.8
Other Educational & General		13.3	–9.9	610.3	112.1	47.8	1,538.6
Plant-Fund Receipts		0	–77.4	11,400	232.0	—	—
TOTAL-ALL INSTITUTIONS							
Total Federal Support		46.7	46.9	26.2	11.8	17.2	303.9
Research		53.8	41.0	13.4	8.8	15.1	267.6
Other Educational & General		26.1	63.1	41.0	34.7	21.5	390.4
Plant-Fund Receipts		22.4	90.4	148.6	–13.4	25.9	501.9

TABLE D-5 (a)—*Distribution of Voluntary Support by Type of Institution, Amount, and Percent of Total*

(in thousands of dollars)

Type of Institution	1959–60		1961–62		1963–64		1965–66		1966–67	
	$ Amount	Percent of total	$ Amount	Percent of total	$ Amount	Percent of total	$ Amount	Percent of total	$ Amount	Percent of total
ALL PUBLIC INSTITUTIONS										
Total Voluntary Support	124,104	15.7	145,809	15.6	184,073	15.7	255,164	19.1	290,373	19.7
Educational & General	(85,504)	(10.8)	(984,416)	(10.5)	(113,858)	(9.7)	(156,358)	(11.7)	(195,691)	(13.3)
Plant-Fund Receipts	(19,799)	(2.5)	(18,085)	(1.9)	(30,806)	(2.6)	(44,518)	(3.3)	(39,372)	(2.7)
Other Voluntary Support	(18,801)	(2.4)	(29,308)	(3.2)	(39,407)	(3.4)	(54,288)	(4.1)	(55,310)	(3.7)
Universities										
Total Voluntary Support	113,780	14.4	134,456	14.3	167,123	14.2	227,036	17.0	245,907	16.7
Educational & General	(78,584)	(9.9)	(92,559)	(9.9)	(104,432)	(8.9)	(142,561)	(10.7)	(169,430)	(11.5)
Plant-Fund Receipts	(17,951)	(2.3)	(14,513)	(1.5)	(27,579)	(2.3)	(38,900)	(2.9)	(32,420)	(2.2)
Other Voluntary Support	(17,345)	(2.2)	(27,484)	(2.9)	(35,112)	(3.0)	(45,575)	(3.4)	(44,057)	(3.0)
Other 4-Year Institutions										
Total Voluntary Support	7,816	1.0	7,523	.8	14,311	1.2	25,180	1.9	37,505	2.5
Educational & General	(5,945)	(.7)	(4,841)	(.5)	(7,999)	(.7)	(12,405)	(.9)	(23,302)	(1.6)
Plant-Fund Receipts	(568)	(.1)	(1,047)	(.1)	(2,500)	(.2)	(4,152)	(.3)	(3,281)	(.2)
Other Voluntary Support	(1,303)	(.2)	(1,635)	(.2)	(3,812)	(.3)	(8,623)	(.7)	(10,922)	(.7)
2-Year Institutions										
Total Voluntary Support	2,408	.3	3,730	.4	2,639	.2	2,948	.2	6,961	.5
Educational & General	(975)	(.1)	(1,016)	(.1)	(1,427)	(.1)	(1,392)	(.1)	(2,959)	(.3)
Plant-Fund Receipts	(1,280)	(.2)	(2,525)	(.3)	(729)	(.1)	(1,466)	(.1)	(3,671)	(.2)
Other Voluntary Support	(153)	(0.0)	(189)	(0.0)	(483)	(0.0)	(90)	(0.0)	(331)	(.2)
ALL PRIVATE INSTITUTIONS										
Total Voluntary Support	664,694	84.3	789,994	84.4	990,697	84.3	1,080,745	80.9	1,182,151	80.3
Educational & General	(297,681)	(37.7)	(352,346)	(37.6)	(437,649)	(37.2)	(486,339)	(36.4)	(572,177)	(38.9)
Plant-Fund Receipts	(176,666)	(22.4)	(208,445)	(22.3)	(283,761)	(24.2)	(321,610)	(24.1)	(316,291)	(21.5)
Other Voluntary Support	(190,347)	(24.2)	(229,203)	(24.5)	(269,287)	(22.9)	(272,796)	(20.4)	(293,683)	(19.9)
Universities										
Total Voluntary Support	272,973	34.6	322,647	34.5	376,465	32.0	446,197	33.4	531,192	36.1
Educational & General	(116,350)	(14.7)	(139,276)	(14.9)	(169,760)	(14.4)	(206,251)	(15.4)	(251,286)	(17.1)
Plant-Fund Receipts	(65,161)	(8.3)	(73,597)	(7.9)	(93,624)	(8.0)	(90,630)	(6.8)	(114,449)	(7.8)
Other Voluntary Support	(91,462)	(11.6)	(109,874)	(11.7)	(113,081)	(9.6)	(149,316)	(11.2)	(165,457)	(11.2)
Other 4-Year Institutions										
Total Voluntary Support	370,750	47.0	446,537	47.7	581,974	49.5	599,973	44.9	611,426	41.5
Educational & General	(169,082)	(21.4)	(199,623)	(21.3)	(250,253)	(21.3)	(261,268)	(19.6)	(297,321)	(20.2)
Plant-Fund Receipts	(105,625)	(13.4)	(128,423)	(13.7)	(177,364)	(15.1)	(216,817)	(16.2)	(187,935)	(12.8)
Other Voluntary Support	(96,043)	(12.2)	(118,491)	(12.7)	(154,357)	(13.1)	(121,888)	(9.1)	(126,170)	(8.5)
2-Year Institutions										
Total Voluntary Support	20,971	2.7	20,710	2.2	32,258	2.7	34,575	2.6	39,533	2.7
Educational & General	(12,249)	(1.6)	(13,447)	(1.4)	(17,636)	(1.5)	(18,820)	(1.4)	(23,570)	(1.6)
Plant-Fund Receipts	(5,880)	(.7)	(6,425)	(.7)	(12,773)	(1.1)	(14,163)	(1.1)	(13,907)	(1.0)
Other Voluntary Support	(2,842)	(.4)	(838)	(.1)	(1,849)	(.1)	(1,592)	(.1)	(2,056)	(.1)
TOTAL—ALL INSTITUTIONS										
Total Voluntary Support	788,798	100.0	935,803	100.0	1,174,770	100.0	1,335,909	100.0	1,472,524	100.0
Educational & General	(383,185)	(48.6)	(450,762)	(48.2)	(551,507)	(46.9)	(642,697)	(48.1)	(767,868)	(52.1)
Plant-Fund Receipts	(196,465)	(24.9)	(226,530)	(24.2)	(314,569)	(26.8)	(366,128)	(27.4)	(355,663)	(24.2)
Other Voluntary Support	(209,148)	(26.5)	(258,511)	(27.6)	(308,694)	(26.3)	(327,084)	(24.5)	(348,993)	(23.7)

TABLE D-5 (b) —*Rate of Increase of Voluntary Support by Type of Institution*

Type of Institution	1959–60	1961–62	1963–64	1965–66	1966–67	Average Annual Rate of Increase	Growth Index (1959–60 = 100%)
ALL PUBLIC INSTITUTIONS							
Total Voluntary Support		17.5	26.2	38.6	13.8	12.5	234.0
Educational & General		15.1	15.7	37.3	25.2	12.6	228.9
Plant-Fund Receipts		–8.7	70.4	48.0	–11.6	10.3	198.9
Other Voluntary Support		55.9	34.5	37.8	1.9	16.7	294.2
Universities							
Total Voluntary Support		18.2	24.3	35.8	8.3	11.6	216.1
Educational & General		17.8	12.8	36.5	18.8	11.6	215.6
Plant-Fund Receipts		–19.2	90.0	41.0	–16.7	8.8	180.6
Other Voluntary Support		58.5	27.7	29.8	–3.4	14.2	254.0
Other 4-Year Institutions							
Total Voluntary Support		–3.8	90.2	75.9	48.9	25.1	479.8
Educational & General		–19.6	65.2	55.1	87.8	21.5	392.0
Plant-Fund Receipts		84.3	138.8	66.1	–21.0	28.5	577.6
Other Voluntary Support		25.5	133.1	126.2	26.7	35.5	838.2
2-Year Institutions							
Total Voluntary Support		54.9	–29.2	11.7	136.1	16.4	289.1
Educational & General		4.2	40.5	–2.5	112.6	17.2	303.5
Plant-Fund Receipts		97.3	–71.1	101.1	150.4	16.2	286.8
Other Voluntary Support		23.5	155.6	–81.4	267.8	11.7	216.3
ALL PRIVATE INSTITUTIONS							
Total Voluntary Support		18.9	25.4	9.1	9.4	8.6	177.8
Educational & General		18.4	47.0	11.1	17.6	9.8	192.2
Plant-Fund Receipts		18.0	36.1	13.3	–1.7	8.7	179.0
Other Voluntary Support		20.4	17.5	1.3	7.7	6.4	154.3
Universities							
Total Voluntary Support		18.2	16.7	18.5	19.0	10.0	194.6
Educational & General		19.7	21.9	21.5	21.8	11.6	216.0
Plant-Fund Receipts		12.9	43.7	–3.2	26.3	8.4	175.6
Other Voluntary Support		20.1	23.6	32.0	10.8	8.8	180.9
Other 4-Year Institutions							
Total Voluntary Support		20.4	30.3	3.1	1.9	7.4	164.9
Educational & General		18.1	48.0	4.4	13.8	8.4	175.8
Plant-Fund Receipts		21.6	38.1	22.2	–13.4	8.6	177.9
Other Voluntary Support		23.4	30.3	–21.0	3.5	4.0	131.4
2-Year Institutions							
Total Voluntary Support		–1.2	55.8	7.2	14.3	9.5	188.5
Educational & General		9.8	44.0	6.7	25.2	9.8	192.4
Plant-Fund Receipts		9.3	98.8	10.9	–1.9	13.1	236.5
Other Voluntary Support		–70.5	120.6	–13.9	29.1	5.5	–27.7
TOTAL-ALL INSTITUTIONS							
Total Voluntary Support		18.6	25.5	13.7	10.2	9.3	186.7
Educational & General		17.6	22.3	16.5	19.5	10.4	200.4
Plant-Fund Receipts		15.3	38.9	16.4	–2.9	8.8	181.0
Other Voluntary Support		23.6	19.4	6.0	6.7	8.3	166.9

TABLE D-6—*Endowment Earnings For Educational and General Purposes by Type of Institution, Amount, Percent of Total, and Rate of Increase*

(in thousands of dollars)

Type of Institution	1959–60	1961–62	1963–64	1965–66	1966–67	Average Annual Rate of Increase	Growth Index (1959–60 = 100%)
ALL PUBLIC INSTITUTIONS							
Amount	$19,686	$22,641	$27,443	$29,949	$31,506		160.0
Percent of Total	9.5	9.7	10.3	9.5	9.6		
Rate of Increase		15.0	21.2	9.1	5.2	6.9	
Universities							
Amount	18,191	20,934	25,499	26,864	27,890		153.3
Percent of Total	8.8	9.0	9.6	8.5	8.5		
Rate of Increase		15.1	21.8	5.4	3.8	6.3	
Other 4-Year Institutions							
Amount	1,083	1,266	1,370	1,947	2,356		217.5
Percent of Total	.5	.5	.5	.6	.7		
Rate of Increase		16.9	8.2	42.1	21.0	11.7	
2-Year Institutions							
Amount	412	441	574	1,138	1,260		305.8
Percent of Total	.2	.2	.2	.4	.4		
Rate of Increase		7.0	30.2	98.3	10.7	17.3	
ALL PRIVATE INSTITUTIONS							
Amount	186,981	209,700	238,770	286,344	296,871		158.8
Percent of Total	90.5	90.3	89.7	90.5	90.4		
Rate of Increase		12.2	13.9	19.9	3.7	6.8	
Universities							
Amount	98,047	112,407	126,143	161,605	163,458		166.7
Percent of Total	47.4	48.5	47.4	51.1	49.8		
Rate of Increase		14.6	12.2	28.1	1.1	7.6	
Other 4-Year Institutions							
Amount	86,707	94,885	109,736	121,403	129,984		149.9
Percent of Total	42.0	40.8	41.2	38.4	39.6		
Rate of Increase		9.4	15.7	10.6	7.1	6.0	
2-Year Institutions							
Amount	2,227	2,408	2,891	3,336	3,429		154.0
Percent of Total	1.1	1.0	1.1	1.0	1.0		
Rate of Increase		8.1	20.1	15.4	2.8	6.4	
TOTAL—ALL INSTITUTIONS							
Amount	206,667	232,341	266,213	316,293	328,377		158.9
Percent of Total	100.0	100.0	100.0	100.0	100.0		
Rate of Increase		12.4	14.6	18.8	3.8	6.8	

Table E-1—*Percent Distribution of Institutional Revenues by Sources and Income Category: All Institutions of Higher Education*

(Amounts in thousands of dollars)

	1959–60	1961–62	1963–64	1965–66	1966–67
Total Institutional Revenues,					
Amount	$7,124,672	$9,287,212	$12,125,507	$16,283,614	$18,537,120
Percent of total	100.0	100.0	100.0	100.0	100.0
All Revenues, Excl. Loans	94.5	94.1	93.4	90.2	89.7
Loans, Noninstitutional Sources	5.1	5.4	6.1	9.3	9.8
Loans, Institutional Sources	.4	.5	.5	.5	.5
Total Current and Plant-Fund Income, Excl. Loans,					
Amount	6,729,286	8,739,213	11,316,926	14,692,410	16,635,338
Percent of total	100.0	100.0	100.0	100.0	100.0
Student Tuition and Fees	17.3	17.2	16.8	18.2	17.9
Federal Government	16.4	18.5	21.0	20.4	20.1
(Research)	(12.3)	(14.6)	(15.9)	(13.9)	(13.3)
(Other)	(4.1)	(3.9)	(5.1)	(6.5)	(6.8)
State Governments	25.3	25.3	23.8	25.6	24.2
Local Governments	2.8	2.6	2.7	2.7	3.2
Private Gifts and Grants	8.6	7.7	7.6	6.9	6.7
Endowment Income	3.1	2.6	2.3	2.1	2.0
All Other Income	26.5	26.1	25.8	24.1	25.9
Educational & General Income,					
Amount	4,712,551	6,072,215	7,830,028	10,340,170	11,985,967
Percent of total	100.0	100.0	100.0	100.0	100.0
Student Tuition and Fees	24.6	24.8	24.3	25.9	24.9
Federal Government	22.2	25.5	28.7	25.8	25.5
(Research)	(17.6)	(21.0)	(22.9)	(19.7)	(18.5)
(Other)	(4.6)	(5.6)	(5.8)	(6.1)	(7.0)
State Governments	29.5	27.7	26.3	29.1	28.2
Local Governments	3.2	3.1	3.1	3.1	3.7
Private Gifts and Grants	8.1	7.4	7.0	6.2	6.4
Endowment Income	4.4	3.8	3.4	3.1	2.7
All Other Educational and General Income	8.0	7.6	7.2	6.8	8.6
Total Physical Plant Receipts,					
Amount	1,311,909	1,820,753	2,534,180	3,487,401	3,904,273
Percent of total	100.0	100.0	100.0	100.0	100.0
Plant-Fund Receipts, Excl. Loans	69.9	69.9	68.1	54.4	51.3
Loans, Noninstitutional Sources	27.7	27.7	29.4	43.4	46.5
Loans, Institutional Sources	2.4	2.4	2.5	2.2	2.2
Plant-Fund Receipts, Excl. Loans,					
Amount	916,523	1,272,754	1,725,599	1,896,197	2,002,491
Percent of total	100.0	100.0	100.0	100.0	100.0
Federal Government	6.3	5.5	7.8	17.6	14.4
State Governments	34.9	40.6	36.7	38.9	31.9
Local Governments	4.0	2.8	3.6	4.3	4.5
Private Gifts and Grants	21.5	17.8	18.2	19.4	17.8
Transfers from Other Funds	24.9	25.1	24.5	N.A.*	23.6
All Other Receipts	8.4	8.2	9.2	19.8	7.8

*See technical Appendix for explanation.

TABLE E-2—*Percent Distribution of Institutional Revenues by Source and Income Category: All Public Institutions*

(Amounts in thousands of dollars)

	1959–60	1961–62	1963–64	1965–66	1966–67
Total Institutional Revenues,					
Amount	$4,108,537	$5,316,708	$6,975,020	$9,749,242	$11,174,108
Percent of total	100.0	100.0	100.0	100.0	100.0
All Revenues, Excl. Loans	94.0	93.9	93.4	89.6	88.9
Loans, Noninstitutional Sources	5.8	5.9	6.5	10.1	11.0
Loans, Institutional Sources	.2	.2	.1	.3	.1
Total Current and Plant-Fund Income, Excl. Loans,					
Amount	3,860,644	4,991,837	6,512,682	8,741,422	9,931,676
Percent of total	100.0	100.0	100.0	100.0	100.0
Student Tuition and Fees	8.6	8.6	8.9	9.8	10.0
Federal Government	15.5	16.5	18.7	18.6	17.9
(Research)	(9.4)	(11.0)	(11.6)	(10.2)	(9.8)
(Other)	(6.1)	(5.4)	(7.1)	(8.4)	(8.1)
State Governments	43.1	42.9	40.5	41.9	39.3
Local Governments	4.8	4.5	4.5	4.5	5.1
Private Gifts and Grants	2.7	2.3	2.2	2.3	2.4
Endowment Income	.5	.4	.4	.3	.3
All Other Income	24.8	24.8	24.8	22.6	25.0
Educational & General Income,					
Amount	2,689,754	3,396,773	4,396,865	6,047,299	7,134,207
Percent of total	100.0	100.0	100.0	100.0	100.0
Student Tuition and Fees	12.3	12.6	13.2	14.1	14.0
Federal Government	20.4	22.8	25.5	22.6	22.2
(Research)	(13.5)	(16.1)	(17.1)	(14.8)	(13.6)
(Other)	(6.9)	(6.7)	(8.4)	(7.8)	(8.6)
State Governments	50.3	48.2	45.8	48.5	46.2
Local Governments	5.5	5.4	5.2	5.1	5.8
Private Gifts and Grants	3.2	2.9	2.6	2.6	2.7
Endowment Income	.7	.7	.6	.5	.4
All Other Educational and General Income	7.6	7.4	7.1	6.6	8.7
Total Physical Plant Receipts,					
Amount	831,887	1,169,279	1,606,342	2,351,567	2,551,682
Percent of total	100.0	100.0	100.0	100.0	100.0
Plant-Fund Receipts, Excl. Loans	70.2	72.2	71.3	57.1	51.3
Loans, Noninstitutional Sources	28.7	27.0	28.4	42.1	48.1
Loans, Institutional Sources	1.1	.8	.3	.8	.6
Plant-Fund Receipts, Excl. Loans,					
Amount	583,994	844,408	1,144,004	1,343,747	1,309,250
Percent of total	100.0	100.0	100.0	100.0	100.0
Federal Government	8.3	5.3	8.1	19.5	14.5
State Governments	53.7	60.2	55.2	54.5	47.5
Local Governments	6.2	4.2	5.4	6.0	6.8
Private Gifts and Grants	3.4	2.1	2.7	3.3	3.0
Transfers from Other Funds	19.1	19.8	17.9	–	19.2
All Other Receipts	9.3	8.4	10.7	16.7	9.0

Table E-3—*Percent Distribution of Institutional Revenues by Source and Income Category: Public Universities*

(Amounts in thousands of dollars)

	1959–60	1961–62	1963–64	1965–66	1966–67
Total Institutional Revenues,					
Amount	$2,692,757	$3,537,412	$4,633,847	$6,105,234	$6,876,091
Percent of total	100.0	100.0	100.0	100.0	100.0
All Revenues, Excl. Loans	94.6	94.7	93.6	91.9	90.9
Loans, Noninstitutional Sources	5.1	5.1	6.3	7.8	8.9
Loans, Institutional Sources	.3	.2	.1	.3	.2
Total Current and Plant-Fund Income, Excl. Loans,					
Amount	2,547,240	3,349,936	4,336,269	5,613,365	6,247,719
Percent of total	100.0	100.0	100.0	100.0	100.0
Student Tuition and Fees	8.3	8.0	8.5	9.1	9.3
Federal Government	18.6	20.5	23.5	21.9	22.4
(Research)	(13.7)	(15.6)	(16.6)	(15.3)	(14.8)
(Other)	(4.9)	(4.9)	(6.9)	(6.6)	(7.6)
State Governments	40.6	41.2	38.1	40.4	36.7
Local Governments	1.4	1.2	1.1	.5	.9
Private Gifts and Grants	3.9	3.2	3.0	3.2	3.2
Endowment Income	.7	.6	.6	.5	.4
All Other Income	26.5	25.3	25.2	24.4	27.1
Educational & General Income,					
Amount	1,861,513	2,389,179	3,080,253	4,032,033	4,635,573
Percent of total	100.0	100.0	100.0	100.0	100.0
Student Tuition and Fees	11.4	11.2	12.0	12.6	12.5
Federal Government	24.6	27.7	31.3	28.7	27.9
(Research)	(18.8)	(21.9)	(23.4)	(21.2)	(19.9)
(Other)	(5.8)	(5.8)	(7.9)	(7.5)	(8.0)
State Governments	47.9	45.7	42.4	45.7	42.6
Local Governments	1.4	1.5	1.3	.7	1.1
Private Gifts and Grants	4.2	3.9	3.4	3.5	3.7
Endowment Income	1.0	.9	.8	.7	.6
All Other Educational and General Income	9.5	9.1	8.8	7.9	11.6
Total Physical Plant Receipts,					
Amount	457,747	683,382	950,535	1,176,349	1,317,450
Percent of total	100.0	100.0	100.0	100.0	100.0
Plant-Fund Receipts, Excl. Loans	68.2	72.6	68.7	58.2	52.3
Loans, Noninstitutional Sources	30.3	26.5	31.0	40.3	46.7
Loans, Institutional Sources	1.5	1.9	.3	1.5	1.0
Plant-Fund Receipts, Excl. Loans,					
Amount	312,230	495,906	652,957	684,481	689,078
Percent of total	100.0	100.0	100.0	100.0	100.0
Federal Government	5.6	4.6	8.7	10.3	15.2
State Governments	45.9	58.2	52.6	61.4	46.1
Local Governments	2.9	.8	1.0	.1	.3
Private Gifts and Grants	5.7	2.9	4.2	5.7	4.7
Transfers from Other Funds	27.5	24.0	23.2	—	23.9
All Other Receipts	12.4	9.5	10.3	22.5	9.8

TABLE E-4—*Percent Distribution of Institutional Revenues by Source and Income Category: Other 4-Year Public Institutions*

(Amounts in thousands of dollars)

	1959–60	1961–62	1963–64	1965–66	1966–67
Total Institutional Revenues,					
Amount	$1,101,729	$1,359,268	$1,783,930	$2,567,723	$3,015,454
Percent of total	100.0	100.0	100.0	100.0	100.0
All Revenues, Excl. Loans	94.6	93.0	92.7	87.1	85.5
Loans, Noninstitutional Sources	5.2	6.8	7.2	12.8	14.5
Loans, Institutional Sources	.2	.2	.1	.1	0
Total Current and Plant-Fund Income, Excl. Loans,					
Amount	1,042,069	1,264,043	1,653,802	2,237,348	2,576,099
Percent of total	100.0	100.0	100.0	100.0	100.0
Student Tuition and Fees	9.3	10.1	10.1	11.4	11.6
Federal Government	11.5	10.2	10.9	15.4	11.3
(Research)	(1.3)	(1.9)	(2.0)	(1.7)	(1.8)
(Other)	(10.2)	(8.3)	(8.9)	(13.7)	(9.5)
State Governments	52.8	51.9	50.1	48.0	48.6
Local Governments	2.9	1.9	2.2	2.5	2.2
Private Gifts and Grants	.6	.5	.6	.7	1.0
Endowment Income	.1	.1	.1	.1	.1
All Other Income	22.8	25.3	26.0	21.9	25.2
Educational & General Income,					
Amount	631,852	748,927	965,329	1,380,418	1,717,881
Percent of total	100.0	100.0	100.0	100.0	100.0
Student Tuition and Fees	15.3	17.2	17.3	18.3	17.5
Federal Government	14.1	14.4	15.1	13.1	14.4
(Research)	(2.1)	(3.2)	(3.5)	(2.8)	(2.8)
(Other)	(12.0)	(11.2)	(11.6)	(10.3)	(11.6)
State Governments	62.0	60.9	60.3	61.1	59.4
Local Governments	3.5	2.8	2.8	3.2	2.9
Private Gifts and Grants	.9	.6	.8	.9	1.4
Endowment Income	.2	.2	.1	.1	.1
All Other Educational and General Income	4.0	3.9	3.6	3.3	4.3
Total Physical Plant Receipts,					
Amount	285,106	364,719	502,105	796,095	810,254
Percent of total	100.0	100.0	100.0	100.0	100.0
Plant-Fund Receipts, Excl. Loans	79.1	73.9	74.1	58.5	45.8
Loans, Noninstitutional Sources	20.1	25.4	25.5	41.3	54.0
Loans, Institutional Sources	.8	.7	.4	.2	.2
Plant-Fund Receipts, Excl. Loans,					
Amount	225,446	269,494	371,977	465,720	370,899
Percent of total	100.0	100.0	100.0	100.0	100.0
Federal Government	13.6	7.8	9.3	35.5	11.9
State Governments	70.2	74.0	66.4	49.6	62.2
Local Governments	3.6	1[illegible]	2.4	2.6	.8
Private Gifts and Grants	.2	.4	.7	.9	.9
Transfers from Other Funds	7.7	9.8	10.8	—	13.5
All Other Receipts	4.7	7.0	10.4	11.4	10.7

TABLE E-5—*Percent Distribution of Institutional Revenues by Source and Income Category: Two-Year Public Institutions*

(Amounts in thousands of dollars)

	1959–60	1961–62	1963–64	1965–66	1966–67
Total Institutional Revenues,					
Amount	$ 314,051	$ 420,028	$ 557,243	$1,076,285	$1,282,563
Percent of total	100.0	100.0	100.0	100.0	100.0
All Revenues, Excl. Loans	86.4	90.0	93.8	82.8	86.4
Loans, Noninstitutional Sources	13.6	10.0	6.2	17.2	13.5
Loans, Institutional Sources	0	0	0	0	.1
Total Current and Plant-Fund Income, Excl. Loans,					
Amount	271,335	377,858	522,611	890,708	1,107,858
Percent of total	100.0	100.0	100.0	100.0	100.0
Student Tuition and Fees	8.8	9.2	9.2	10.4	10.5
Federal Government	1.4	1.2	2.8	6.0	7.6
(Research)	0	0	0	0	0
(Other)	(1.4)	(1.2)	(2.8)	(6.0)	(7.6)
State Governments	28.7	28.4	30.8	36.1	32.9
Local Governments	43.5	41.3	40.0	34.2	35.8
Private Gifts and Grants	.8	.9	.4	.3	.6
Endowment Income	.1	.1	.1	.1	.1
All Other Income	16.8	18.9	16.7	12.9	12.5
Educational & General Income,					
Amount	196,389	258,667	351,283	634,848	780,753
Percent of total	100.0	100.0	100.0	100.0	100.0
Student Tuition and Fees	12.2	13.3	13.6	14.5	14.9
Federal Government	1.7	1.4	3.6	4.5	5.5
(Research)	0	0	0	(.1)	0
(Other)	(1.7)	(1.4)	(3.6)	(4.4)	(5.5)
State Governments	33.5	33.9	34.5	37.7	37.2
Local Governments	50.3	49.3	46.3	37.4	39.9
Private Gifts and Grants	.5	.4	.4	.2	.4
Endowment Income	.2	.2	.2	.2	.2
All Other Educational and General Income	1.6	1.5	1.4	5.5	1.9
Total Physical Plant Receipts,					
Amount	89,034	121,178	153,702	379,123	423,978
Percent of total	100.0	100.0	100.0	100.0	100.0
Plant-Fund Receipts, Excl. Loans	52.0	65.2	77.5	51.0	50.8
Loans, Noninstitutional Sources	48.0	34.6	22.3	49.0	41.0
Loans, Institutional Sources	0	.2	.2	0	.2
Plant-Fund Receipts, Excl. Loans,					
Amount	46,318	79,008	119,070	193,546	249,273
Percent of total	100.0	100.0	100.0	100.0	100.0
Federal Government	.6	1.1	1.5	13.0	16.6
State Governments	26.3	25.1	33.3	42.3	29.8
Local Governments	41.7	36.2	39.5	34.8	34.1
Private Gifts and Grants	2.8	3.2	.6	.8	1.5
Transfers from Other Funds	17.9	27.6	11.2	—	13.8
All Other Receipts	10.7	6.8	13.9	9.1	4.2

TABLE E-6—*Percent Distribution of Institutional Revenues by Source and Income Category: All Private Institutions*

(Amounts in thousands of dollars)

	1959–60	1961–62	1963–64	1965–66	1966–67
Total Institutional Revenues,					
Amount	$3,016,135	$3,970,504	$5,150,487	$6,534,372	$7,363,012
Percent of total	100.0	100.0	100.0	100.0	100.0
All Revenues, Excl. Loans	95.2	94.4	93.3	91.1	91.1
Loans, Noninstitutional Sources	4.1	4.7	5.6	8.0	8.0
Loans, Institutional Sources	.7	.9	1.1	.9	.9
Total Current and Plant-Fund Income, Excl. Loans,					
Amount	2,868,642	3,747,376	4,804,244	5,950,988	6,703,662
Percent of total	100.0	100.0	100.0	100.0	100.0
Student Tuition and Fees	28.9	28.6	27.4	30.7	29.7
Federal Government	17.5	21.3	24.1	23.0	23.5
(Research)	(16.2)	(19.4)	(21.7)	(19.2)	(18.6)
(Other)	(1.3)	(1.9)	(2.4)	(3.8)	(4.9)
State Governments	1.5	1.5	1.2	1.5	1.5
Local Governments	.2	.2	.2	.1	.4
Private Gifts and Grants	16.5	15.0	15.0	13.6	13.2
Endowment Income	6.5	5.6	5.0	4.8	4.4
All Other Income	28.9	27.8	27.1	26.3	27.3
Educational & General Income,					
Amount	2,002,797	2,675,442	3,433,163	4,292,871	4,851,760
Percent of total	100.0	100.0	100.0	100.0	100.0
Student Tuition and Fees	41.0	40.3	38.4	42.5	40.9
Federal Government	24.4	28.8	32.6	30.2	30.4
(Research)	(23.0)	(27.1)	(30.4)	(26.6)	(25.7)
(Other)	(1.4)	(1.7)	(2.2)	(3.6)	(4.7)
State Governments	1.8	1.8	1.6	2.0	1.8
Local Governments	.2	.2	.3	.2	.5
Private Gifts and Grants	14.8	13.2	12.7	11.3	11.8
Endowment Income	9.2	7.8	6.9	6.7	6.1
All Other Educational and General Income	8.6	7.9	7.5	7.1	8.5
Total Physical Plant Receipts,					
Amount	480,022	651,474	927,838	1,135,834	1,352,591
Percent of total	100.0	100.0	100.0	100.0	100.0
Plant-Fund Receipts, Excl. Loans	69.3	65.7	62.7	48.6	51.2
Loans, Noninstitutional Sources	26.0	29.0	31.0	46.2	43.7
Loans, Institutional Sources	4.7	5.3	6.3	5.2	5.1
Plant-Fund Receipts, Excl. Loans,					
Amount	332,529	428,346	581,595	552,450	693,241
Percent of total	100.0	100.0	100.0	100.0	100.0
Federal Government	2.7	6.1	7.1	13.1	14.2
State Governments	2.0	1.8	.4	1.0	2.4
Local Governments	0	0	0	.2	.1
Private Gifts and Grants	53.1	48.7	48.8	58.2	45.7
Transfers from Other Funds	35.3	35.7	37.4	—	32.2
All Other Receipts	6.9	7.7	6.3	27.5	5.4

TABLE E-7—*Percent Distribution of Institutional Revenues by Source and Income Category: Private Universities*

(Amounts in thousands of dollars)

	1959–60	1961–62	1963–64	1965–66	1966–67
Total Institutional Revenues,					
Amount	$1,396,811	$1,796,726	$2,303,685	$2,857,298	$3,445,043
Percent of total	100.0	100.0	100.0	100.0	100.0
All Revenues, Excl. Loans	96.4	96.5	93.7	94.6	95.5
Loans, Noninstitutional Sources	2.9	2.8	4.8	4.6	3.6
Loans, Institutional Sources	.7	.7	1.5	.8	.9
Total Current and Plant-Fund Income, Excl. Loans,					
Amount	1,346,299	1,735,097	2,159,084	2,703,958	3,291,608
Percent of total	100.0	100.0	100.0	100.0	100.0
Student Tuition and Fees	25.1	24.7	23.0	25.4	22.6
Federal Government	24.7	27.8	31.3	30.6	33.8
(Research)	(22.6)	(25.0)	(27.2)	(25.1)	(27.5)
(Other)	(2.1)	(2.8)	(4.1)	(5.5)	(6.3)
State Governments	2.7	2.7	2.1	2.8	2.6
Local Governments	.2	.2	.4	.2	.7
Private Gifts and Grants	13.5	12.3	12.2	11.0	11.1
Endowment Income	7.3	6.5	5.8	6.0	5.0
All Other Income	26.5	25.7	25.2	24.0	24.2
Educational & General Income,					
Amount	1,030,201	1,336,098	1,669,357	2,111,977	2,581,794
Percent of total	100.0	100.0	100.0	100.0	100.0
Student Tuition and Fees	32.9	32.1	29.7	32.5	28.7
Federal Government	31.8	35.2	38.9	37.5	41.2
(Research)	(29.6)	(32.5)	(35.2)	(32.1)	(35.1)
(Other)	(2.2)	(2.6)	(3.7)	(5.4)	(6.1)
State Governments	2.9	3.0	2.7	3.4	2.8
Local Governments	.3	.3	.5	.2	.9
Private Gifts and Grants	11.3	10.4	10.2	9.8	9.7
Endowment Income	9.5	8.4	7.5	7.6	6.3
All Other Educational and General Income	11.3	10.6	10.5	9.0	10.4
Total Physical Plant Receipts,					
Amount	186,826	241,017	370,263	346,151	444,777
Percent of total	100.0	100.0	100.0	100.0	100.0
Plant-Fund Receipts, Excl. Loans	73.0	74.1	60.9	55.7	65.5
Loans, Noninstitutional Sources	21.5	20.8	30.1	37.8	27.7
Loans, Institutional Sources	5.5	5.1	9.0	6.5	6.8
Plant-Fund Receipts, Excl. Loans,					
Amount	136,314	178,388	225,662	192,811	291,342
Percent of total	100.0	100.0	100.0	100.0	100.0
Federal Government	3.6	7.4	11.8	18.7	17.3
State Governments	4.7	3.9	.6	1.7	5.1
Local Governments	0	.1	0	.6	0
Private Gifts and Grants	47.8	41.3	41.5	47.0	39.4
Transfers from Other Funds	36.5	40.8	40.2	—	33.2
All Other Receipts	7.4	6.5	5.9	32.0	5.0

TABLE E-8—*Percent Distribution of Institutional Revenues by Source and Income Category: Other 4-Year Private Institutions*

(Amounts in thousands of dollars)

	1959–60	1961–62	1963–64	1965–66	1966–67
Total Institutional Revenues,					
Amount	$1,517,186	$2,045,497	$2,676,359	$3,447,828	$3,651,392
Percent of total	100.0	100.0	100.0	100.0	100.0
All Revenues, Excl. Loans	93.9	92.5	93.1	88.4	87.2
Loans, Noninstitutional Sources	5.3	6.5	6.0	10.7	11.8
Loans, Institutional Sources	.8	1.0	.9	.9	1.0
Total Current and Plant-Fund Income, Excl. Loans,					
Amount	1,424,311	1,891,472	2,489,760	3,047,253	3,185,597
Percent of total	100.0	100.0	100.0	100.0	100.0
Student Tuition and Fees	31.5	31.3	30.4	34.3	35.7
Federal Government	11.9	16.5	19.3	17.6	14.2
(Research)	(11.2)	(15.4)	(18.2)	(15.2)	(10.6)
(Other)	(.7)	(1.1)	(1.1)	(2.4)	(3.6)
State Governments	.5	.4	.4	.5	.5
Local Governments	.1	.2	.1	.1	.1
Private Gifts and Grants	19.3	17.3	17.2	15.7	15.2
Endowment Income	6.1	5.0	4.4	4.0	4.1
All Other Income	30.6	29.3	28.2	27.8	30.2
Educational & General Income,					
Amount	933,593	1,264,512	1,673,435	2,057,264	2,126,227
Percent of total	100.0	100.0	100.0	100.0	100.0
Student Tuition and Fees	48.1	46.7	45.2	50.9	53.5
Federal Government	17.7	23.7	27.9	24.3	19.2
(Research)	(17.1)	(23.0)	(27.1)	(22.5)	(15.9)
(Other)	(.6)	(.7)	(.8)	(1.8)	(3.3)
State Governments	.7	.6	.6	.6	.6
Local Governments	.2	.3	.1	.1	.1
Private Gifts and Grants	18.1	15.8	14.9	12.8	14.0
Endowment Income	9.3	7.5	6.5	5.9	6.1
All Other Educational and General Income	5.9	5.4	4.8	5.4	6.5
Total Physical Plant Receipts,					
Amount	277,944	391,446	518,068	739,831	843,772
Percent of total	100.0	100.0	100.0	100.0	100.0
Plant-Fund Receipts, Excl. Loans	66.6	60.7	64.0	45.8	44.8
Loans, Noninstitutional Sources	29.1	33.9	31.3	49.8	50.9
Loans, Institutional Sources	4.3	5.4	4.7	4.4	4.3
Plant-Fund Receipts, Excl. Loans,					
Amount	185,069	237,421	331,469	339,256	377,977
Percent of total	100.0	100.0	100.0	100.0	100.0
Federal Government	2.3	5.4	4.5	10.5	12.2
State Governments	.1	.3	.3	.7	.4
Local Governments	0	0	0	0	0
Private Gifts and Grants	57.1	54.1	53.5	63.9	49.7
Transfers from Other Funds	34.3	31.6	35.9	—	32.0
All Other Receipts	6.2	8.6	5.8	24.9	5.7

Table E-9—*Percent Distribution of Institutional Revenues by Source and Income Category: Two Year Private Institutions*

(Amounts in thousands of dollars)

	1959–60	1961–62	1963–64	1965–66	1966–67
Total Institutional Revenues,					
Amount	$102,138	$ 127,281	$ 170,443	$ 229,246	$ 266,577
Percent of total	100.0	100.0	100.0	100.0	100.0
All Revenues, Excl. Loans	96.0	94.9	91.2	87.1	84.9
Loans, Noninstitutional Sources	3.8	4.6	8.3	11.4	14.2
Loans, Institutional Sources	.2	.5	.5	1.5	.9
Total Current and Plant-Fund Income, Excl. Loans,					
Amount	98,032	120,807	155,400	199,777	226,457
Percent of total	100.0	100.0	100.0	100.0	100.0
Student Tuition and Fees	42.6	46.5	42.1	46.4	46.8
Federal Government	1.0	1.0	1.2	2.1	3.8
(Research)	(.7)	(.7)	(1.0)	(.7)	(.7)
(Other)	(.3)	(.3)	(.2)	(1.4)	(3.1)
State Governments	0	.1	.1	.2	.2
Local Governments	.1	.1	0	0	.4
Private Gifts and Grants	18.5	16.5	19.6	16.5	16.5
Endowment Income	2.3	2.0	1.9	1.7	1.5
All Other Income	35.5	33.9	35.1	33.1	30.8
Educational & General Income,					
Amount	59,003	74,832	90,371	123,630	143,739
Percent of total	100.0	100.0	100.0	100.0	100.0
Student Tuition and Fees	70.7	75.2	72.3	75.0	73.6
Federal Government	1.7	1.5	2.2	2.7	4.1
(Research)	(1.2)	(1.1)	(1.9)	(1.0)	(1.1)
(Other)	(.5)	(.4)	(.3)	(1.7)	(3.0)
State Governments	.1	.2	.2	.4	.3
Local Governments	.2	.1	.1	0	.4
Private Gifts and Grants	20.8	18.0	19.5	15.2	16.4
Endowment Income	3.8	3.2	3.2	2.7	2.4
All Other Educational and General Income	2.7	1.8	2.5	4.0	2.8
Total Physical Plant Receipts,					
Amount	15,252	19,011	39,507	49,852	64,042
Percent of total	100.0	100.0	100.0	100.0	100.0
Plant-Fund Receipts, Excl. Loans	73.1	65.9	61.9	40.9	37.4
Loans, Noninstitutional Sources	25.6	31.0	36.1	52.2	58.7
Loans, Institutional Sources	1.3	3.1	2.0	6.9	3.9
Plant-Fund Receipts, Excl. Loans,					
Amount	11,146	12,537	24,464	20,383	23,922
Percent of total	100.0	100.0	100.0	100.0	100.0
Federal Government	0	.2	0	3.9	11.2
State Governments	0	0	0	0	.7
Local Governments	0	0	0	0	1.2
Private Gifts and Grants	52.8	51.2	52.3	69.5	58.1
Transfers from Other Funds	35.8	41.3	31.8	—	22.9
All Other Receipts	11.4	7.3	15.9	26.6	5.9

Table F-1—*Percent Distribution of Institutional Expenditures by Function and Expenditure Category: All Institutions of Higher Education*

(Amounts in thousands of dollars)

	1959–60	1961–62	1963–64	1965–66	1966–67
Total Institutional Expenditures,					
Amount	$6,823,647	$8,776,547	$11,520,068	$15,786,747	$18,509,442
Percent of total	100.0	100.0	100.0	100.0	100.0
Educational & General	66.5	66.1	64.8	63.4	61.7
(Organized Research)	(15.0)	(16.9)	(17.2)	(15.5)	(13.6)
Plant-Fund Expenditures	17.5	18.1	19.9	20.4	22.7
All Other Expenditures	16.0	15.8	15.3	16.2	15.6
Educational and General,					
Amount	4,536,054	5,798,127	7,466,393	10,003,9[illegible]7	11,409,977
Percent of total	100.0	100.0	100.0	100.0	100.0
General Administration and General Expense	12.9	12.7	12.9	12.6	12.7
Instruction and Departmental Research	39.7	38.2	37.8	37.8	38.4
Extension and Public Service	4.6	4.2	4.0	4.4	4.3
Libraries	3.0	3.1	3.2	3.5	3.7
Plant Operation & Maintenance	10.4	9.8	9.2	8.5	8.5
Organized Research	22.7	25.5	26.5	24.5	22.1
All Other Educational & General	6.7	6.5	6.4	8.7	10.3
Educational and General, Excl. Research,					
Amount	3,511,656	4,316,749	5,483,500	7,551,015	8,888,940
Percent of total	100.0	100.0	100.0	100.0	100.0
General Administration and General Expense	16.7	17.1	17.6	16.7	16.4
Instruction and Departmental Research	51.4	51.3	51.4	50.1	49.3
Extension and Public Service	5.9	5.7	5.5	5.9	5.5
Libraries	3.9	4.1	4.3	4.6	4.7
Plant Operation & Maintenance	13.5	13.1	12.6	11.2	10.9
All Other Educational & General	8.6	8.7	8.6	11.5	13.2
Plant-Fund Expenditures					
Amount	1,195,689	1,586,467	2,295,074	3,216,804	4,207,536
Percent of total	100.0	100.0	100.0	100.0	100.0
Additions to Plant	85.3	83.5	83.1	81.0	77.7
Reduction of Capital Indebtedness	9.1	10.1	9.7	11.0	13.9
Other Deductions from Plant-Funds	5.6	6.4	7.2	8.0	8.4

TABLE F-2—*Percent Distribution of Institutional Expenditures by Function and Expenditure Category: All Public Institutions*

(Amounts in thousands of dollars)

	1959–60	1961–62	1963–64	1965–66	1966–67
Total Institutional Expenditures,					
Amount	$3,893,618	$4,905,327	$6,533,493	$9,194,176	$11,162,075
Percent of total	100.0	100.0	100.0	100.0	100.0
Educational & General	66.8	66.4	64.3	63.0	60.9
(Organized Research)	(13.5)	(14.9)	(14.3)	(12.5)	(19.9)
Plant-Fund Expenditures	19.0	19.1	21.7	22.6	25.1
All Other Expenditures	14.2	14.5	14.0	14.4	14.0
Educational and General,					
Amount	2,600,231	3,256,999	4,199,775	5,795,252	6,796,105
Percent of total	100.0	100.0	100.0	100.0	100.0
General Administration and General Expense	10.4	10.3	10.9	10.6	10.9
Instruction and Departmental Research	41.3	40.4	40.8	41.0	41.5
Extension and Public Service	7.5	6.9	6.5	6.8	6.2
Libraries	2.9	3.0	3.2	3.5	3.6
Plant Operation & Maintenance	10.5	9.9	9.3	8.5	8.6
Organized Research	20.2	22.5	22.3	19.8	17.9
All Other Educational & General	7.2	7.0	7.0	9.8	11.3
Educational and General, Excl. Research,					
Amount	2,075,690	2,523,553	3,263,869	4,645,609	5,576,887
Percent of total	100.0	100.0	100.0	100.0	100.0
General Administration and General Expense	13.1	13.2	14.0	13.2	13.2
Instruction and Departmental Research	51.8	52.2	52.5	51.2	50.6
Extension and Public Service	9.4	8.9	8.4	8.5	7.5
Libraries	3.6	3.8	4.1	4.3	4.4
Plant Operation & Maintenance	13.1	12.8	12.0	10.6	10.5
All Other Educational & General	9.0	9.1	9.0	12.2	13.8
Plant-Fund Expenditures					
Amount	739,280	937,769	1,418,997	2,079,474	2,800,618
Percent of total	100.0	100.0	100.0	100.0	100.0
Additions to Plant	84.6	81.7	83.3	82.8	77.7
Reduction of Capital Indebtedness	8.8	10.9	8.7	8.7	13.6
Other Deductions from Plant-Funds	6.6	7.4	8.0	8.5	8.7

TABLE F-3—*Percent Distribution of Institutional Expenditures by Function and Expenditure Category: Public Universities*

(Amounts in thousands of dollars)

	1959–60	1961–62	1963–64	1965–66	1966–67
Total Institutional Expenditures,					
Amount	$2,597,886	$3,312,223	$4,367,789	$5,947,693	$6,968,703
Percent of total	100.0	100.0	100.0	100.0	100.0
Educational & General	69.5	69.4	67.7	66.3	64.3
(Organized Research)	(19.5)	(21.3)	(20.6)	(18.5)	(16.7)
Plant-Fund Expenditures	16.7	17.0	18.9	19.7	21.8
All Other Expenditures	13.8	13.6	13.4	14.0	13.9
Educational and General,					
Amount	1,805,309	2,299,966	2,958,362	3,942,519	4,479,215
Percent of total	100.0	100.0	100.0	100.0	100.0
General Administration and General Expense	8.3	8.2	8.9	8.3	8.4
Instruction and Departmental Research	33.8	33.2	33.2	33.9	34.2
Extension and Public Service	10.2	9.1	8.7	9.1	8.2
Libraries	2.5	2.6	2.7	2.9	3.0
Plant Operation & Maintenance	8.2	7.6	7.4	6.9	7.0
Organized Research	28.1	30.7	30.4	27.9	25.9
All Other Educational & General	8.9	8.6	8.8	11.0	13.3
Educational and General, Excl. Research,					
Amount	1,298,950	1,593,326	2,059,839	2,841,492	3,317,808
Percent of total	100.0	100.0	100.0	100.0	100.0
General Administration and General Expense	11.6	11.7	12.8	11.4	11.3
Instruction and Departmental Research	47.0	48.0	47.6	47.2	46.2
Extension and Public Service	14.1	13.2	12.5	12.6	11.2
Libraries	3.5	3.7	3.9	4.0	4.0
Plant Operation & Maintenance	11.4	11.0	10.6	9.6	9.4
All Other Educational & General	12.4	12.4	12.6	15.3	17.9
Plant-Fund Expenditures					
Amount	434,522	563,118	825,105	1,171,354	1,523,435
Percent of total	100.0	100.0	100.0	100.0	100.0
Additions to Plant	81.7	78.0	79.9	79.9	74.7
Reduction of Capital Indebtedness	9.8	12.7	9.7	8.7	13.3
Other Deductions from Plant-Funds	8.5	9.3	10.4	11.4	12.0

TABLE F-4—*Percent Distribution of Institutional Expenditures by Function and Expenditure Category: Other 4-Year Public Institutions*

(Amounts in thousands of dollars)

	1959–60	1961–62	1963–64	1965–66	1966–67
Total Institutional Expenditures,					
Amount	$1,010,719	$1,228,560	$1,661,449	$2,344,916	$3,015,657
Percent of total	100.0	100.0	100.0	100.0	100.0
Educational & General	60.4	58.9	55.8	55.2	53.8
(Organized Research)	(1.8)	(2.2)	(2.2)	(2.1)	(1.9)
Plant-Fund Expenditures	22.9	23.0	27.3	28.2	30.2
All Other Expenditures	16.7	18.1	16.9	16.6	16.0
Educational and General,					
Amount	610,084	723,305	926,364	1,294,661	1,622,741
Percent of total	100.0	100.0	100.0	100.0	100.0
General Administration and General Expense	15.4	15.8	15.8	15.6	15.7
Instruction and Departmental Research	56.5	55.0	56.3	53.8	53.0
Extension and Public Service	1.4	1.5	1.4	1.5	1.9
Libraries	3.9	4.2	4.5	5.0	5.1
Plant Operation & Maintenance	15.9	15.6	14.3	12.1	11.9
Organized Research	3.0	3.7	4.1	3.7	3.5
All Other Educational & General	3.9	4.2	3.6	8.3	8.9
Educational and General, Excl. Research,					
Amount	591,923	696,507	889,043	1,246,309	1,565,255
Percent of total	100.0	100.0	100.0	100.0	100.0
General Administration and General Expense	15.8	16.4	16.5	16.3	16.3
Instruction and Departmental Research	58.3	57.2	58.7	55.9	55.0
Extension and Public Service	1.5	1.6	1.5	1.5	2.0
Libraries	4.0	4.4	4.7	5.2	5.2
Plant Operation & Maintenance	16.4	16.2	14.9	12.6	12.3
All Other Educational & General	4.0	4.3	3.7	8.5	9.2
Plant-Fund Expenditures					
Amount	231,648	282,482	454,004	660,658	910,939
Percent of total	100.0	100.0	100.0	100.0	100.0
Additions to Plant	89.5	88.4	89.0	86.2	80.6
Reduction of Capital Indebtedness	6.9	7.1	6.5	8.9	14.6
Other Deductions from Plant-Funds	3.6	4.5	4.5	4.9	4.8

TABLE F-5—*Percent Distribution of Institutional Expenditures by Function and Expenditure Category: 2-Year Public Institutions*

(Amounts in thousands of dollars)

	1959–60	1961–62	1963–64	1965–66	1966–67
Total Institutional Expenditures,					
Amount	$ 285,013	$ 364,544	$ 504,255	$ 901,567	$1,177,715
Percent of total	100.0	100.0	100.0	100.0	100.0
Educational & General	64.8	64.1	62.5	61.9	58.9
(Organized Research)	—	—	(.01)	(.02)	(.02)
Plant-Fund Expenditures	25.7	25.3	27.7	27.4	31.1
All Other Expenditures	9.5	10.6	9.8	10.7	10.0
Educational and General,					
Amount	184,838	233,728	315,049	558,072	694,149
Percent of total	100.0	100.0	100.0	100.0	100.0
General Administration and General Expense	14.7	14.7	14.8	15.9	15.8
Instruction and Departmental Research	65.1	65.7	66.7	61.3	61.4
Extension and Public Service	1.8	1.5	1.6	3.4	2.8
Libraries	2.7	3.1	3.3	4.0	4.4
Plant Operation & Maintenance	14.9	14.3	13.0	11.1	11.5
Organized Research	0	0	0	0	0
All Other Educational & General	.8	.7	.6	4.3	4.1
Educational and General, Excl. Research,					
Amount	184,817	233,720	314,987	557,808	693,824
Percent of total	100.0	100.0	100.0	100.0	100.0
General Administration and General Expense	14.7	14.7	14.8	15.9	15.7
Instruction and Departmental Research	65.1	65.7	66.7	61.2	61.5
Extension and Public Service	1.8	1.5	1.6	3.4	2.8
Libraries	2.7	3.1	3.3	4.0	4.4
Plant Operation & Maintenance	14.9	14.3	13.0	11.2	11.5
All Other Educational & General	.8	.7	.6	4.3	4.1
Plant-Fund Expenditures					
Amount	73,110	92,169	139,888	247,462	366,244
Percent of total	100.0	100.0	100.0	100.0	100.0
Additions to Plant	86.3	83.6	84.6	87.8	83.3
Reduction of Capital Indebtedness	8.8	11.3	10.2	7.6	12.5
Other Deductions from Plant-Funds	4.9	5.1	5.2	4.6	4.2

Table F-6—*Percent Distribution of Institutional Expenditures by Function and Expenditure Category: All Private Institutions*

(Amounts in thousands of dollars)

	1959–60	1961–62	1963–64	1965–66	1966–67
Total Institutional Expenditures,					
Amount	$2,930,029	$3,871,220	$4,986,575	$6,592,571	$7,347,367
Percent of total	100.0	100.0	100.0	100.0	100.0
Educational & General	66.1	65.6	65.5	63.8	62.8
(Organized Research)	(17.0)	(19.3)	(21.0)	(19.8)	(17.7)
Plant-Fund Expenditures	15.6	16.8	17.6	17.3	19.1
All Other Expenditures	18.3	17.6	16.9	18.9	18.1
Educational and General,					
Amount	1,935,823	2,541,128	3,266,618	4,208,745	4,613,872
Percent of total	100.0	100.0	100.0	100.0	100.0
General Administration and General Expense	16.3	15.8	15.5	15.3	15.5
Instruction and Departmental Research	37.6	35.5	33.9	33.4	33.9
Extension and Public Service	.7	.8	.7	1.1	1.4
Libraries	3.2	3.2	3.2	3.5	3.7
Plant Operation & Maintenance	10.4	9.6	9.1	8.4	8.4
Organized Research	25.8	29.4	32.1	31.0	28.3
All Other Educational & General	6.0	5.7	5.5	7.3	8.8
Educational and General, Excl. Research,					
Amount	1,435,966	1,793,196	2,219,631	2,905,406	3,312,053
Percent of total	100.0	100.0	100.0	100.0	100.0
General Administration and General Expense	22.0	22.5	22.9	22.2	21.6
Instruction and Departmental Research	50.7	50.2	49.9	48.3	47.3
Extension and Public Service	.9	1.1	1.0	1.6	2.0
Libraries	4.3	4.5	4.7	5.0	5.2
Plant Operation & Maintenance	14.0	13.6	13.4	12.3	11.7
All Other Educational & General	8.1	8.1	8.1	10.6	12.2
Plant-Fund Expenditures					
Amount	456,409	648,698	876,077	1,137,330	1,406,918
Percent of total	100.0	100.0	100.0	100.0	100.0
Additions to Plant	86.4	86.2	82.9	77.6	77.8
Reduction of Capital Indebtedness	9.6	8.9	11.2	15.3	14.4
Other Deductions from Plant-Funds	4.0	4.9	5.9	7.1	7.8

TABLE F-7—*Percent Distribution of Institutional Expenditures by Function and Expenditure Category: Private Universities*

(Amounts in thousands of dollars)

	1959–60	1961–62	1963–64	1965–66	1966–67
Total Institutional Expenditures,					
Amount	$1,358,818	$1,774,028	$2,260,014	$3,004,283	$3,513,521
Percent of total	100.0	100.0	100.0	100.0	100.0
Educational & General	72.1	71.1	69.8	71.7	70.6
(Organized Research)	(25.1)	(25.9)	(26.5)	(27.5)	(27.2)
Plant-Fund Expenditures	12.7	14.2	16.4	12.9	14.7
All Other Expenditures	15.2	14.7	13.8	15.4	14.7
Educational and General,					
Amount	979,072	1,261,571	1,581,087	2,153,524	2,481,610
Percent of total	100.0	100.0	100.0	100.0	100.0
General Administration and General Expense	11.7	11.5	10.9	10.5	9.9
Instruction and Departmental Research	33.7	32.4	31.9	30.7	29.7
Extension and Public Service	.8	1.0	.8	1.1	1.2
Libraries	2.9	2.9	3.0	3.2	3.2
Plant Operation & Maintenance	7.9	7.9	7.5	6.8	6.5
Organized Research	34.8	36.4	37.9	38.3	38.5
All Other Educational & General	8.2	7.9	8.0	9.4	11.0
Educational and General, Excl. Research,					
Amount	638,031	802,236	981,449	1,328,072	1,524,850
Percent of total	100.0	100.0	100.0	100.0	100.0
General Administration and General Expense	18.0	18.0	17.7	17.1	16.1
Instruction and Departmental Research	51.6	51.0	51.2	49.6	48.3
Extension and Public Service	1.1	1.5	1.3	1.8	1.9
Libraries	4.5	4.7	4.8	5.2	5.3
Plant Operation & Maintenance	12.2	12.4	12.1	11.1	10.5
All Other Educational & General	12.6	12.4	12.9	15.2	17.9
Plant-Fund Expenditures					
Amount	173,219	252,265	373,890	388,721	515,864
Percent of total	100.0	100.0	100.0	100.0	100.0
Additions to Plant	88.8	90.4	81.7	73.2	76.0
Reduction of Capital Indebtedness	7.4	4.7	11.0	16.0	12.8
Other Deductions from Plant-Funds	3.8	4.9	7.3	10.8	11.2

Table F-8—*Percent Distribution of Institutional Expenditures by Function and Expenditure Category: Other 4-Year Private Institutions*

(Amounts in thousands of dollars)

	1959–60	1961–62	1963–64	1965–66	1966–67
Total Institutional Expenditures,					
Amount	$1,475,031	$1,979,208	$2,563,183	$3,372,317	$3,577,837
Percent of total	100.0	100.0	100.0	100.0	100.0
Educational & General	60.8	61.0	62.3	57.5	55.8
(Organized Research)	(10.7)	(14.5)	(17.4)	(14.1)	(9.6)
Plant-Fund Expenditures	18.2	19.1	18.2	20.7	23.1
All Other Expenditures	21.0	19.9	19.5	21.7	21.1
Educational and General,					
Amount	897,473	1,207,028	1,597,856	1,939,401	1,997,701
Percent of total	100.0	100.0	100.0	100.0	100.0
General Administration and General Expense	20.6	19.6	19.4	19.7	21.4
Instruction and Departmental Research	41.1	37.7	35.1	35.8	38.6
Extension and Public Service	.6	.6	.6	1.1	1.8
Libraries	3.5	3.4	3.4	3.8	4.3
Plant Operation & Maintenance	12.6	11.1	10.3	9.9	10.4
Organized Research	17.6	23.8	28.0	24.6	17.2
All Other Educational & General	4.0	3.9	3.2	5.1	6.3
Educational and General, Excl. Research,					
Amount	739,183	919,155	1,151,977	1,462,565	1,653,719
Percent of total	100.0	100.0	100.0	100.0	100.0
General Administration and General Expense	25.0	26.0	26.9	26.2	25.8
Instruction and Departmental Research	49.9	49.4	48.7	47.6	46.7
Extension and Public Service	.8	.7	.9	1.4	2.1
Libraries	4.2	4.4	4.7	5.0	5.1
Plant Operation & Maintenance	15.2	14.5	14.3	13.1	12.7
All Other Educational & General	4.9	5.0	4.5	6.8	7.6
Plant-Fund Expenditures					
Amount	268,355	378,060	466,291	700,053	826,213
Percent of total	100.0	100.0	100.0	100.0	100.0
Additions to Plant	84.8	83.3	83.6	80.1	78.9
Reduction of Capital Indebtedness	10.9	11.7	11.4	14.6	15.0
Other Deductions from Plant-Funds	4.3	5.0	5.0	5.2	6.1

TABLE F-9—*Percent Distribution of Institutional Expenditures by Function and Expenditure Category: 2-Year Private Institutions*

(Amounts in thousands of dollars)

	1959–60	1961–62	1963–64	1965–66	1966–67
Total Institutional Expenditures,					
Amount	$ 96,180	$ 117,984	$ 157,378	$ 215,971	$ 256,009
Percent of total	100.0	100.0	100.0	100.0	100.0
Educational & General	61.6	61.5	55.7	53.7	52.6
(Organized Research)	(.5)	(.6)	(.9)	(.5)	(.4)
Plant-Fund Expenditures	15.5	15.6	22.8	22.5	25.3
All Other Expenditures	22.9	22.9	21.5	23.8	22.1
Educational and General,					
Amount	59,278	72,529	87,675	115,820	134,561
Percent of total	100.0	100.0	100.0	100.0	100.0
General Administration and General Expense	27.2	27.9	29.1	30.6	32.5
Instruction and Departmental Research	49.5	50.2	48.8	44.0	42.5
Extension and Public Service	.7	1.8	.8	1.2	1.0
Libraries	2.8	2.9	3.3	4.2	4.4
Plant Operation & Maintenance	18.4	15.6	15.6	14.8	14.9
Organized Research	.9	1.0	1.7	.9	.8
All Other Educational & General	.5	.6	.7	4.3	3.9
Educational and General, Excl. Research,					
Amount	58,752	71,805	86,205	114.769	133,484
Percent of total	100.0	100.0	100.0	100.0	100.0
General Administration and General Expense	27.4	28.2	29.6	30.9	32.7
Instruction and Departmental Research	50.0	50.6	49.6	44.4	42.8
Extension and Public Service	.7	1.9	.8	1.2	1.0
Libraries	2.8	2.9	3.4	4.2	4.5
Plant Operation & Maintenance	18.6	15.8	15.9	14.9	15.0
All Other Educational & General	.5	.6	.7	4.4	4.0
Plant-Fund Expenditures					
Amount	14,835	18,373	35,896	48,556	64,841
Percent of total	100.0	100.0	100.0	100.0	100.0
Additions to Plant	87.1	86.2	87.5	77.7	76.7
Reduction of Capital Indebtedness	11.0	10.6	9.4	18.6	19.5
Other Deductions from Plant-Funds	1.9	3.2	3.1	3.7	3.8

Table G-1—*Total Current Funds and Plant Funds Expenditures per Full-Time Equivalent Student by Type of Institution, Amount, and Rate of Increase*

Type of Institution	1959–60	1961–62	1963–64	1965–66	1966–67	Average Annual Rate of Increase	Growth Index (1959–60 = 100%)
ALL PUBLIC INSTITUTIONS							
Amount Per FTE Student	$2,308	$2,468	$2,758	$2,950	$3,263		141.4
Rate of Increase		6.9	11.8	7.0	10.6	5.1	
Universities							
Amount Per FTE Student	3,281	3,599	4,002	4,349	4,727		144.1
Rate of Increase		9.7	11.2	8.7	8.7	5.4	
Other 4-Year Institutions							
Amount Per FTE Student	1,719	1,800	2,055	2,222	2,629		152.9
Rate of Increase		4.7	14.2	8.1	18.3	6.3	
2-Year Institutions							
Amount Per FTE Student	928	946	1,076	1,299	1,474		158.8
Rate of Increase		1.9	13.7	20.7	13.5	6.8	
ALL PRIVATE INSTITUTIONS							
Amount Per FTE Student	2,570	3,090	3,688	4,150	4,363		169.8
Rate of Increase		20.2	19.4	12.5	5.1	7.9	
Universities							
Amount Per FTE Student	3,676	4,386	5,189	5,868	6,478		176.2
Rate of Increase		19.3	18.3	13.1	10.4	8.4	
Other 4-Year Institutions							
Amount Per FTE Student	2,101	2,567	3,083	3,488	3,513		167.2
Rate of Increase		22.2	20.1	13.1	.7	7.6	
2-Year Institutions							
Amount Per FTE Student	1,411	1,531	1,842	1,972	2,077		147.2
Rate of Increase		8.5	20.3	7.1	5.3	5.7	
TOTAL ALL INSTITUTIONS							
Amount Per FTE Student	2,414	2,708	3,096	3,355	3,626		150.2
Rate of Increase		12.2	14.3	8.4	8.1	6.0	

TABLE G-2—*Total Current Funds Expenditures Excluding Research per Full-Time Equivalent Student by Type of Institution, Amount, and Rate of Increase*

Type of Institution	1959–60	1961–62	1963–64	1965–66	1966–67	Average Annual Rate of Increase	Growth Index (1959–60 = 100%)
ALL PUBLIC INSTITUTIONS							
Amount Per FTE Student	$1,559	$1,627	$1,764	$1,914	$2,088		133.9
Rate of Increase		4.4	8.4	8.5	9.1	4.3	
Universities							
Amount Per FTE Student	2,093	2,219	2,422	2,688	2,906		138.8
Rate of Increase		6.0	9.1	11.0	8.1	4.8	
Other 4-Year Institutions							
Amount Per FTE Student	1,294	1,347	1,447	1,550	1,785		137.9
Rate of Increase		4.1	7.4	7.1	15.2	4.7	
2-Year Institutions							
Amount Per FTE Student	690	707	777	942	1,015		147.1
Rate of Increase		2.5	9.9	21.2	7.7	5.7	
ALL PRIVATE INSTITUTIONS							
Amount Per FTE Student	1,731	1,975	2,265	2,614	2,754		159.1
Rate of Increase		14.1	14.7	15.4	5.4	6.9	
Universities							
Amount Per FTE Student	2,284	2,627	2,968	3,496	3,763		164.8
Rate of Increase		15.0	13.0	17.8	7.6	7.4	
Other 4-Year Institutions							
Amount Per FTE Student	1,493	1,703	1,986	2,271	2,364		158.3
Rate of Increase		14.1	16.6	14.4	4.1	6.8	
2-Year Institutions							
Amount Per FTE Student	1,185	1,283	1,404	1,519	1,542		130.1
Rate of Increase		8.3	9.4	8.2	1.5	3.8	
TOTAL ALL INSTITUTIONS							
Amount Per FTE Student	1,629	1,762	1,946	2,150	2,308		141.7
Rate of Increase		8.2	10.4	10.5	7.3	5.1	

TABLE G-3—*Total Educational and General Expenditures Excluding Research per Full-Time Equivalent Student by Type of Institution, Amount, and Rate of Increase*

Type of Institutions	1959–60	1961–62	1963–64	1965–66	1966–67	Average Annual Rate of Increase	Growth Index (1959–60 = 100%)
ALL PUBLIC INSTITUTIONS							
Amount Per FTE Student	$1,230	$1,269	$1,377	$1,490	$1,630		132.5
Rate of Increase		3.2	8.5	8.2	9.4	4.1	
Universities							
Amount Per FTE Student	1,640	1,731	1,887	2,077	2,250		137.2
Rate of Increase		5.6	9.0	10.1	8.3	4.6	
Other 4-Year Institutions							
Amount Per FTE Student	1,006	1,020	1,099	1,181	1,364		135.6
Rate of Increase		1.4	7.7	7.5	15.5	4.4	
2-Year Institutions							
Amount Per FTE Student	601	606	671	803	868		144.4
Rate of Increase		1.0	10.7	19.7	8.1	5.4	
ALL PRIVATE INSTITUTIONS							
Amount Per FTE Student	1,259	1,431	1,641	1,829	1,966		156.2
Rate of Increase		13.7	14.7	11.5	7.5	6.6	
Universities							
Amount Per FTE Student	1,725	1,983	2,253	2,593	2,811		163.0
Rate of Increase		15.0	13.6	15.1	8.4	7.2	
Other 4-Year Institutions							
Amount Per FTE Student	1,052	1,191	1,385	1,512	1,623		154.3
Rate of Increase		13.2	16.3	9.2	7.3	6.4	
2-Year Institutions							
Amount Per FTE Student	861	931	1,008	1,048	1,082		125.7
Rate of Increase		8.1	8.3	4.0	3.2	3.3	
TOTAL ALL INSTITUTIONS							
Amount Per FTE Student	1,242	1,332	1,473	1,604	1,741		140.2
Rate of Increase		7.2	10.6	8.9	8.5	4.9	

TABLE G-4—*Total Expenditures for Instruction and Departmental Research per Full-Time Equivalent Student by Type of Institution Amount, and Rate of Increase*

Type of Institution	1959–60	1961–62	1963–64	1965–66	1966–67	Average Annual Rate of Increase	Growth Index (1959–60 = 100%)
ALL PUBLIC INSTITUTIONS							
Amount Per FTE Student	$ 637	$ 662	$ 723	$ 762	$ 824		129.4
Rate of Increase		3.9	9.2	5.4	8.1	3.7	
Universities							
Amount Per FTE Student	770	830	899	979	1,040		135.1
Rate of Increase		7.8	8.3	8.9	6.2	4.4	
Other 4-Year Institutions							
Amount Per FTE Student	587	584	646	660	750		127.8
Rate of Increase		–.5	10.6	2.2	13.6	3.6	
2-Year Institutions							
Amount Per FTE Student	391	399	448	492	534		136.6
Rate of Increase		2.0	12.3	9.8	8.5	4.6	
ALL PRIVATE INSTITUTIONS							
Amount Per FTE Student	639	719	819	884	929		145.4
Rate of Increase		12.5	13.9	7.9	5.1	5.5	
Universities							
Amount Per FTE Student	892	1,012	1,156	1,286	1,357		152.1
Rate of Increase		13.5	14.2	11.2	5.5	6.2	
Other 4-Year Institutions							
Amount Per FTE Student	525	590	675	718	758		144.4
Rate of Increase		12.4	14.4	6.4	5.6	5.4	
2-Year Institutions							
Amount Per FTE Student	431	472	500	465	464		107.7
Rate of Increase		9.5	5.9	–7.0	–.2	1.1	
TOTAL ALL INSTITUTIONS							
Amount Per FTE Student	638	684	758	804	859		134.6
Rate of Increase		7.2	8.1	6.1	6.8	4.3	

TABLE G-5—*Estimated Average Tuition and Fee Income per Full-Time Equivalent Student* by Type of Institution, Amount, and Rate of Increase*

Type of Institution	1959–60	1961–62	1963–64	1965–66	1966–67	Average Annual Rate of Increase	Growth Index (1959–60 = 100%)
ALL PUBLIC INSTITUTIONS							
Average Tuitions and Fees	$ 196	$ 216	$ 246	$ 274	$ 291		148.5
Rate of Increase		10.2	13.9	11.4	6.2	5.8	
Universities							
Average Tuitions and Fees	266	290	337	372	394		148.1
Rate of Increase		9.0	16.2	10.4	5.9	5.8	
Other 4-Year Institutions							
Average Tuitions and Fees	164	187	205	239	261		159.1
Rate of Increase		14.0	9.6	16.6	9.2	6.9	
2-Year Institutions							
Average Tuitions and Fees	77	88	101	132	145		188.3
Rate of Increase		14.3	14.8	30.7	9.1	9.5	
ALL PRIVATE INSTITUTIONS							
Average Tuitions and Fees	727	858	973	1,149	1,178		162.0
Rate of Increase		18.0	13.4	18.1	2.5	7.1	
Universities							
Average Tuitions and Fees	916	1,060	1,138	1,339	1,369		149.5
Rate of Increase		15.7	7.4	17.7	2.2	5.9	
Other 4-Year Institutions							
Average Tuitions and Fees	639	765	908	1,082	1,116		174.6
Rate of Increase		19.7	18.7	19.2	3.1	8.3	
2-Year Institutions							
Average Tuitions and Fees	612	729	764	846	858		140.2
Rate of Increase		19.1	4.8	10.7	1.4	4.9	

*Average tuition and fees per student have been calculated by dividing tuition and fee income (allocated for Educational and General purpose only) by the full-time equivalent enrollment for each type of institution. Since these figures closely approximate full-time tuition charges published by the Office of Education, they have been used for purposes of this study as estimates of actual per student tuition and fee charges.

TABLE H-1—*Current-Fund Income 1959–60* [1]

(in thousands of dollars)

Type of Institution	INCOME FOR EDUCATIONAL AND GENERAL PURPOSES								Total Income for Ed. & Gen. Purposes (Columns 1–8)	Other Current-Fund Income [4]	Total Current-Fund Income (Columns 9 & 10)
	Tuition and Fees	Federal Government, Research	Federal Government, other Support	State Governments [2]	Local Governments	Endowment Earnings	Private Gifts & Grants	Other Income [3]			
	1	2	3	4	5	6	7	8	9	10	11
Universities (total)	550,220	655,244	130,495	921,485	29,110	116,238	194,934	293,988	2,891,714	553,281	3,444,995
Public	211,263	350,212	107,650	891,871	26,309	18,191	78,584	177,433	1,861,513	373,497	2,235,010
Private	338,957	305,032	22,845	29,614	2,801	98,047	116,350	116,555	1,030,201	179,784	1,209,985
Other 4-year (total)	545,895	172,729	81,783	398,124	23,849	87,790	175,027	80,248	1,565,445	490,420	2,055,865
Public	96,812	13,272	75,589	391,710	22,297	1,083	5,945	25,144	631,852	184,771	816,623
Private	449,083	159,457	6,194	6,414	1,552	86,707	169,082	55,104	933,593	305,649	1,239,242
2-year (total)	65,637	762	3,695	65,856	98,756	2,639	13,224	4,823	255,392	56,511	311,903
Public	23,881	30	3,410	65,818	98,648	412	975	3,215	196,389	28,628	225,017
Private	41,756	732	285	38	108	2,227	12,249	1,608	59,003	27,883	86,886
Total Public	331,956	363,514	186,649	1,349,399	147,254	19,686	85,504	205,792	2,689,754	586,896	3,276,650
Total Private	829,796	465,221	29,324	36,066	4,461	186,981	297,681	173,267	2,022,797	513,316	2,536,113
TOTAL Institutions	1,161,752	828,735	215,973	1,385,465	151,715	206,667	383,185	379,059	4,712,551	1,100,212	5,812,763

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[1] Source: *Financial Statistics of Institutions of Higher Education, 1959-60.* (OE-52007) U.S. Office of Education, 1964, pp. 13 and 14.

[2] Excludes Federal aid received through State channels and regional compacts. Estimates of Federal support received through State Channels are based on 1963-64 financial data.

[3] Includes income from organized activities relating to educational departments, sales and services of educational departments, and other miscellaneous educational and general income.

[4] Includes income from auxiliary enterprises and student-aid income from specifically designated or earmarked funds.

TABLE H-2—*Plant-Fund Receipts 1959–60* [1]

(in thousands of dollars)

Type of Institution	DIRECT PLANT-FUND INCOME						PLANT-FUND LOAN RECEIPTS					
	Federal Government 1	State Governments 2	Local Governments 3	Private Gifts & Grants 4	Other Income [2] 5	Total Direct Plant-Fund Income (Columns 1–5) 6	Non-Institutional Sources 7	Institutional Sources 8	Total Plant-Fund Loan Receipts (Columns 7–8) 9	Transfers from Other Funds 10	Total Plant-Fund Receipts (Columns 6, 9, 10) 11	Private Gifts & Grants for Fund Increases [3] 12
Universities (total)	22,448	149,782	8,905	83,112	48,988	313,235	178,603	17,426	196,029	135,309	644,573	108,807
Public	17,568	143,371	8,905	17,951	38,833	226,628	138,382	7,135	145,517	85,602	457,747	17,345
Private	4,880	6,411	0	65,161	10,155	86,607	40,221	10,291	50,512	49,707	186,826	91,462
Other 4-year (total)	34,881	158,413	8,067	106,193	21,946	329,500	138,283	14,252	152,535	81,015	563,050	97,346
Public	30,681	158,155	8,067	568	10,507	207,978	57,428	2,232	59,660	17,468	285,106	1,303
Private	4,200	258	0	105,625	11,439	121,522	80,855	12,020	92,875	63,547	277,944	96,043
2-year (total)	270	12,207	19,332	7,160	6,222	45,191	46,627	195	46,822	12,273	104,286	2,995
Public	270	12,207	19,332	1,280	4,950	38,039	42,714	2	42,716	8,279	89,034	153
Private	0	0	0	5,880	1,272	7,152	3,913	193	4,106	3,994	15,252	2,842
Total Public	48,519	313,733	36,304	19,799	54,290	472,645	238,524	9,369	247,893	111,349	831,887	18,801
Total Private	9,080	6,669	0	176,666	22,866	215,281	124,989	22,504	147,493	117,248	480,022	190,347
TOTAL Institutions	57,599	320,402	36,304	196,465	77,156	687,926	363,513	31,873	395,386	228,597	1,311,909	209,148

[1] Source: *Financial Statistics of Institutions of Higher Education, 1959-60*. (OE-52007), U.S. Office of Education, 1964, pp. 13 and 14.

[2] Includes earnings on plant-fund investments and proceeds from sale of plant-fund assets, student fees restricted to use for plant expansion or debt retirement, and other miscellaneous plant-fund income.

[3] In order to reflect total private giving to higher education, private gifts and grants for endowment, student loan, and annuity and living trust funds have been included on this table.

TABLE H-3—*Current-Fund Expenditures 1959–1960*[1]

(in thousands of dollars)

Type of Institution	EXPENDITURES FOR EDUCATIONAL AND GENERAL PURPOSES										Total Expen. for Ed. & Gen. Purposes (Columns 9–10)	Auxiliary Enterprises	Student-Aid Expen.	Total Current–Fund Expen. (Columns 11–13)
	General Admin. & General Expense	Instruction and Departmental Research	Extension & Public Service	Libraries	Plant Operation and Maintenance	Total (Columns 1–5)	Related Activities	Sales & Service Expen.	Total Expen. excl. Research (Columns 6–8)	Organized Research				
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Universities (total)	265,412	939,737	190,383	74,608	225,333	1,695,473	232,445	9,063	1,936,981	847,400	2,784,381	467,540	97,042	3,348,963
Public	150,413	609,936	183,661	46,031	147,766	1,137,807	152,491	8,652	1,298,950	506,359	1,805,309	317,207	40,848	2,163,364
Private	114,999	329,801	6,722	28,577	77,567	557,666	79,954	411	638,031	341,041	979,072	150,333	56,194	1,185,599
Other 4-year (total)	278,612	713,566	14,302	54,701	209,812	1,270,993	60,042	71	1,331,106	176,451	1,507,557	404,176	74,014	1,985,747
Public	93,816	344,849	8,626	23,651	97,086	568,028	23,824	71	591,923	18,161	610,084	149,736	19,251	779,071
Private	184,796	368,717	5,676	31,050	112,726	702,965	36,218	0	739,183	158,290	897,473	254,440	54,763	1,206,676
2-year (total)	43,311	149,566	3,694	6,604	38,536	241,711	1,858	0	243,569	547	244,116	46,227	2,905	293,248
Public	27,234	120,199	3,267	4,938	27,614	183,252	1,565	0	184,817	21	184,838	25,614	1,451	211,903
Private	16,077	29,367	427	1,666	10,922	58,459	293	0	58,752	526	59,278	20,613	1,454	81,345
Total Public	271,463	1,074,984	195,554	74,620	272,466	1,817,836	177,880	8,723	2,075,690	524,541	2,600,231	492,557	61,550	3,154,338
Total Private	315,872	727,885	12,825	61,293	201,215	1,390,341	116,465	411	1,435,966	499,857	1,935,823	425,386	112,411	2,473,620
TOTAL Institutions	587,335	1,802,869	208,379	135,913	473,681	3,208,177	294,345	9,134	3,511,656	1,024,398	4,536,054	917,943	173,961	5,627,958

[1] Source: *Financial Statistics of Institutions of Higher Education, 1959-60.* (OE-52007), U.S. Office of Education, 1964, pp. 13 and 14.

TABLE H-4—*Plant-Fund Expenditures and Property Values 1959–60* [1]

(in thousands of dollars)

Type of Institution	PLANT-FUND EXPENDITURES			Total Expen. from Plant-Funds (Columns 1–3)	Total Current-Fund Expenditures [3]	Total Current & Plant-Fund Expen. (Columns 4–5)	PROPERTY VALUES AT END OF FISCAL YEAR					
	Additions to Plant	Reduction of Capital Indebtedness	Other Deductions [2]				Total Property Values	Total Plant-Value	Unexpended Plant-Funds	Endowment Funds	Other Non-expendable Funds	Liabilities of Plant-Funds
	1	2	3	4	5	6	7	8	9	10	11	12
Universities (total)	508,806	55,569	43,366	607,741	3,348,963	3,956,704	10,876,872	6,961,471	540,472	3,244,440	130,489	1,072,683
Public	354,921	42,799	36,802	434,522	2,163,364	2,597,886	6,142,072	4,787,395	386,088	916,339	52,250	793,648
Private	153,885	12,770	6,564	173,219	1,185,599	1,358,818	4,734,800	2,174,076	154,384	2,328,101	78,239	279,035
Other 4-year (total)	434,876	45,385	19,742	500,003	1,985,747	2,485,750	8,334,727	5,740,536	450,576	2,027,833	115,784	777,382
Public	207,217	16,144	8,287	231,648	779,071	1,010,719	2,746,076	2,426,181	274,335	31,111	14,451	291,547
Private	227,659	29,241	11,455	268,355	1,206,676	1,475,031	5,588,651	3,314,355	176,241	1,996,722	101,333	485,835
2-year (total)	15,969	8,089	3,887	87,945	293,248	381,193	1,013,273	886,353	73,290	50,698	2,932	120,219
Public	63,059	6,451	3,600	73,110	211,903	285,013	709,378	634,839	65,110	8,601	828	103,099
Private	12,910	1,638	287	14,835	81,345	96,180	303,895	251,514	8,180	42,097	2,104	17,120
Total Public	625,197	65,394	48,689	739,280	3,154,338	3,893,618	9,597,526	7,848,415	725,533	956,051	67,529	1,188,294
Total Private	394,454	43,649	18,306	456,409	2,473,620	2,930,029	10,627,346	5,739,945	338,805	4,366,920	181,676	781,990
TOTAL Institutions	1,019,651	109,043	66,995	1,195,689	5,627,958	6,823,647	20,224,872	13,588,360	1,064,338	5,322,971	249,205	1,970,284

[1] Source: *Financial Statistics of Institutions of Higher Education, 1959-60.* (OE-52007), U.S. Office of Education, 1964, pp. 13 and 14.

[2] Includes interest on plant indebtedness paid from plant funds, transfers and loans from plant funds to other institutional funds, and other miscellaneous deductions.

[3] Taken from table H-3, column 14.

TABLE H-5—*Current-Fund Income 1961–62* [1]

(in thousands of dollars)

Type of Institution	INCOME FOR EDUCATIONAL AND GENERAL PURPOSES								Total Income for Ed. & Gen. Purposes (Columns 1–8)	Other Current-Fund Income [4]	Total Current-Fund Income (Columns 9 & 10)
	Tuition and Fees	Federal Government, Research	Federal Government, other Support	State Governments [2]	Local Governments	Endowment Earnings	Private Gifts & Grants	Other Income [3]			
	1	2	3	4	5	6	7	8	9	10	11
Universities (total)	696,437	958,647	175,160	1,132,768	38,935	133,341	231,835	358,154	3,725,277	685,462	4,410,739
Public	267,483	524,091	139,830	1,092,220	35,355	20,934	92,559	216,707	2,389,179	464,851	2,854,030
Private	428,954	434,556	35,330	40,548	3,580	112,407	139,276	141,447	1,336,098	220,611	1,556,709
Other 4-year (total)	718,385	314,845	93,123	463,833	24,570	96,151	204,464	98,068	2,013,439	635,161	2,648,600
Public	127,966	23,852	83,978	456,151	21,253	1,266	4,841	29,620	748,927	245,622	994,549
Private	590,419	290,993	9,145	7,682	3,317	94,885	199,623	68,448	1,264,512	389,539	1,654,051
2-year (total)	90,506	871	4,059	87,835	127,684	2,849	14,463	5,232	333,499	73,621	407,120
Public	34,282	29	3,736	87,686	127,629	441	1,016	3,848	258,667	40,183	298,850
Private	56,224	842	323	149	55	2,408	13,447	1,384	74,832	33,438	108,270
Total Public	429,731	547,972	227,544	1,636,057	184,237	22,641	98,416	250,175	3,396,773	750,656	4,147,429
Total Private	1,075,597	726,391	44,798	48,379	6,952	209,700	352,346	211,279	2,675,442	643,588	3,319,030
TOTAL Institutions	1,505,328	1,274,363	272,342	1,684,436	191,189	232,341	450,762	461,454	6,072,215	1,394,244	7,466,459

[1] Source: ***Higher Education Finances: Selected Trend and Summary Data.*** (OE-52009), U.S. Office of Education, 1968, pp. 34 and 35.

[2] Excludes Federal aid received through State channels and regional compacts. Estimates of Federal support received through State channels are based on 1963-64 financial data.

[3] Includes income from organized activities relating to educational departments, sales and services of educational departments, and other miscellaneous educational and general income.

[4] Includes income from auxiliary enterprises and student aid from specifically designated or earmarked funds.

Table H-6—*Plant-Fund Receipts 1961–62* [1]

(in thousands of dollars)

Type of Institution	DIRECT PLANT-FUND INCOME					Total Direct Plant-Fund Income (Columns 1–5)	PLANT-FUND LOAN RECEIPTS			Transfers from Other Funds	Total Plant-Fund Receipts (Columns 6, 9, 10)	Private Gifts & Grants for Fund Increases [3]
	Federal Government	State Governments	Local Governments	Private Gifts & Grants	Other Income [2]		Non-Institutional Sources	Institutional Sources	Total Plant-Fund Loan Receipts (Columns 7–8)			
	1	2	3	4	5	6	7	8	9	10	11	12
Universities (total)	36,112	295,720	4,174	88,110	58,727	482,843	231,493	18,612	250,105	191,451	924,399	137,358
Public	22,808	288,708	3,963	14,513	47,056	377,048	181,262	6,214	187,476	118,858	683,382	27,484
Private	13,304	7,012	211	73,597	11,671	105,795	50,231	12,398	62,629	72,593	241,017	109,874
Other 4-year (total)	33,479	200,369	2,742	129,470	39,399	405,459	225,400	23,850	249,250	101,456	756,165	120,126
Public	20,852	199,570	2,742	1,047	18,869	243,080	92,681	2,544	95,225	26,414	364,719	1,635
Private	12,627	799	0	128,423	20,530	162,379	132,719	21,306	154,025	75,042	391,446	118,491
2-year (total)	911	19,809	28,578	8,950	6,309	64,557	47,857	787	48,644	26,988	140,189	1,027
Public	880	19,809	28,578	2,525	5,397	57,189	41,971	199	42,170	21,819	121,178	189
Private	31	0	0	6,425	912	7,368	5,886	588	6,474	5,169	19,011	838
Total Public	44,540	508,087	35,283	18,085	71,322	677,317	315,914	8,957	324,871	167,091	1,169,279	29,308
Total Private	25,962	7,811	211	208,445	33,113	275,542	188,836	34,292	223,128	152,804	651,474	229,203
TOTAL Institutions	70,502	515,898	35,494	226,530	104,435	952,859	504,750	43,249	547,999	319,895	1,820,753	258,511

[1] Source: *Higher Education Finances: Selected Trend and Summary Data.* (OE-52009), U.S. Office of Education, 1968, pp. 34 and 35.

[2] Includes earnings on plant-fund investments and proceeds from sale of plant-fund assets, student fees restricted to use for plant expansion or debt retirement, and other miscellaneous plant-fund income.

[3] In order to reflect total private giving to higher education, private gifts and grants for endowment, student loan, and annuity and living trust funds have been included on this table.

TABLE H-7—*Current-Fund Expenditures 1961–62* [1]

(in thousands of dollars)

Type of Institution	EXPENDITURES FOR EDUCATIONAL AND GENERAL PURPOSES										Total Expen. for Ed. & Gen. Purposes (Columns 9–10)	Auxiliary Enterprises	Student-Aid Expen.	Total Current-Fund Expen. (Columns 11–13)
	General Admin. & General Expense	Instruction and Departmental Research	Extension & Public Service	Libraries	Plant Operation and Maintenance	Total (Columns 1–5)	Related Activities	Sales & Service Expen.	Total Expen. excl. Research (Columns 6–8)	Organized Research				
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Universities (total)	331,014	1,173,170	222,600	97,289	275,134	2,099,207	288,342	8,013	2,395,562	1,165,975	3,561,537	577,736	131,595	4,270,868
Public	186,285	764,071	210,186	59,684	175,921	1,396,147	190,070	7,109	1,593,326	706,640	2,299,966	393,047	56,092	2,749,105
Private	144,729	409,099	12,414	37,605	99,213	703,060	98,272	904	802,236	459,335	1,261,571	184,689	75,503	1,521,763
Other 4-year (total)	350,726	852,849	17,649	71,455	246,089	1,538,768	76,894	0	1,615,662	314,671	1,930,333	520,724	96,169	2,547,226
Public	114,093	398,174	10,913	30,332	112,929	666,441	30,066	0	696,507	26,798	723,305	200,120	22,653	946,078
Private	236,633	454,675	6,736	41,123	133,160	872,327	46,828	0	919,155	287,873	1,207,028	320,604	73,516	1,601,148
2-year (total)	54,448	189,974	4,940	9,365	44,800	303,527	1,998	0	305,525	732	306,257	62,217	3,512	371,986
Public	34,197	153,607	3,607	7,234	33,474	232,119	1,601	0	233,720	8	233,728	36,816	1,831	272,375
Private	20,251	36,367	1,333	2,131	11,326	71,408	397	0	71,805	724	72,529	25,401	1,681	99,611
Total Public	334,575	1,315,852	224,706	97,250	322,324	2,294,707	221,737	7,109	2,523,553	733,446	3,256,999	629,983	80,576	3,967,558
Total Private	401,613	900,141	20,483	80,859	243,699	1,646,795	145,497	904	1,793,196	747,932	2,541,128	530,694	150,700	3,222,522
TOTAL Institutions	736,188	2,215,993	245,189	178,109	566,023	3,941,502	367,234	8,013	4,316,749	1,481,378	5,798,127	1,160,677	231,276	7,190,080

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[1] Source: *Higher Education Finance: Selected Trend and Summary Data.* (OE-52009), U.S. Office of Education, 1968, pp. 34–35.

TABLE H-8—*Plant-Fund Expenditures and Property Values 1961–62* [1]

(in thousands of dollars)

Type of Institution	PLANT-FUND EXPENDITURES			Total Expen. from Plant-Funds (Columns 1–3)	Total Current-Fund Expenditures [3]	Total Current & Plant-Fund Expen. (Columns 4–5)	PROPERTY VALUES AT END OF FISCAL YEAR					
	Additions to Plant	Reduction of Capital Indebtedness	Other Deductions [2]				Total Property Values	Total Plant-Value	Unexpended Plant-Funds	Endowment Funds	Other Non-expendable Funds	Liabilities of Plant-Funds
	1	2	3	4	5	6	7	8	9	10	11	12
Universities (total)	667,078	83,740	64,565	815,383	4,270,868	5,086,251	13,045,864	8,525,823	703,719	3,682,780	133,541	1,436,892
Public	438,952	72,056	52,110	563,118	2,749,105	3,312,223	7,479,569	5,874,616	515,129	1,044,288	45,535	1,047,644
Private	228,126	11,684	12,455	252,265	1,521,763	1,774,028	5,566,295	2,651,207	188,590	2,638,492	88,006	389,248
Other 4-year (total)	564,613	64,187	31,742	660,542	2,547,226	3,207,768	10,055,399	7,084,477	499,756	2,335,085	136,080	1,170,550
Public	249,692	20,102	12,688	282,482	946,078	1,228,560	3,240,165	2,899,463	297,214	33,467	10,018	412,863
Private	314,921	44,085	19,054	378,060	1,601,148	1,979,208	6,815,234	4,185,014	202,542	2,301,618	126,062	757,687
2-year (total)	92,879	12,363	5,300	110,542	371,986	482,528	1,301,265	1,117,271	117,749	62,859	3,385	206,569
Public	77,060	10,406	4,703	92,169	272,375	364,544	956,989	838,533	109,513	8,368	575	175,307
Private	15,819	1,957	597	18,373	99,611	117,984	344,276	278,738	8,236	54,491	2,810	31,262
Total Public	765,704	102,564	69,501	937,769	3,967,558	4,905,327	11,676,723	9,612,612	406,727	1,086,123	56,128	1,635,814
Total Private	558,866	57,726	32,106	648,698	3,222,522	3,871,220	12,725,805	7,114,959	399,368	4,994,601	216,878	1,178,197
TOTAL Institutions	1,324,570	160,290	101,607	1,586,467	7,190,080	8,776,547	24,402,528	16,727,571	1,321,224	6,080,724	273,006	2,814,011

[1] Source: *Higher Education Finances: Selected Trend and Summary Data.* (OE-52009), U.S. Office of Education, 1968, pp. 34–35.

[2] Includes interest on plant indebtedness paid from plant funds, transfers and loans from plant funds to other institutional funds, and other miscellaneous deductions.

[3] Taken from table H-7, column 14.

Table H-9—*Current-Fund Income 1963–64* [1]

(in thousands of dollars)

Type of Institution	INCOME FOR EDUCATIONAL AND GENERAL PURPOSES								Total Income for Ed. & Gen. Purposes (Columns 1–8)	Other Current-Fund Income [4]	Total Current-Fund Income (Columns 9 & 10)
	Tuition and Fees	Federal Government, Research	Federal Government, other Support	State Governments [2]	Local Governments	Endowment Earnings	Private Gifts & Grants	Other Income [3]			
	1	2	3	4	5	6	7	8	9	10	11
Universities (total)	864,606	1,308,627	305,625	1,350,074	48,982	151,642	274,192	445,862	4,749,610	867,124	5,616,734
Public	368,800	720,726	243,586	1,305,344	40,892	25,499	104,432	270,974	3,080,253	603,059	3,683,312
Private	495,806	587,901	62,039	44,730	8,090	126,143	169,760	174,888	1,669,357	264,065	1,933,422
Other 4-year (total)	921,723	486,773	125,381....	591,663	29,012	111,106	258,252	114,854	2,638,764	801,352	3,440,116
Public	166,295	33,701	112,035	581,979	27,214	1,370	7,999	34,736	965,329	316,496	1,281,825
Private	755,428	453,072	13,346	9,684	1,798	109,736	250,253	80,118	1,673,435	484,856	2,158,291
2-year (total)	113,125	1,695	13,123	121,452	162,362	3,465	19,063	7,369	441,654	92,823	534,477
Public	47,771	23	12,832	121,290	162,299	574	1,427	5,067	351,283	52,258	403,541
Private	65,354	1,672	291	162	63	2,891	17,636	2,302	90,371	40,565	130,936
Total Public	582,866	754,450	368,453	2,008,613	230,405	27,443	113,858	310,777	4,396,865	971,813	5,368,678
Total Private	1,316,588	1,042,645	75,676	54,576	9,951	238,770	437,649	257,308	3,433,163	789,486	4,222,649
TOTAL Institutions	1,899,454	1,797,095	444,129	2,063,189	240,356	266,213	551,507	568,085	7,830,028	1,761,299	9,591,327

[1] Source: ***Higher Education Finances: Selected Trend and Summary Data.*** (OE-52009), U.S. Office of Education, 1968, pp. 4–5.

[2] Excludes Federal aid received through State channels and regional compacts.

[3] Includes income from organized activities relating to educational departments, sales and services of educational departments, and other miscellaneous educational and general income.

[4] Includes income from auxiliary enterprises and student aid income from specifically designated or earmarked funds.

TABLE H-10—*Plant-Fund Receipts 1963–64* [1]

(in thousands of dollars)

Type of Institution	DIRECT PLANT-FUND INCOME						PLANT-FUND LOAN RECEIPTS					
	Federal Government	State Governments	Local Governments	Private Gifts & Grants	Other Income [2]	Total Direct Plant-Fund Income (Columns 1–5)	Non-Institutional Sources	Institutional Sources	Total Plant-Fund Loan Receipts (Columns 7–8)	Transfers from Other Funds	Total Plant-Fund Receipts (Columns 6, 9, 10)	Private Gifts & Grants for Fund Increases [3]
	1	2	3	4	5	6	7	8	9	10	11	12
Universities (total)	83,203	344,647	6,532	121,203	80,631	636,216	405,697	36,482	442,179	242,403	1,320,798	148,193
Public	56,662	343,345	6,482	27,579	67,266	501,334	294,528	3,050	297,578	151,623	950,535	35,112
Private	26,541	1,302	50	93,624	13,365	134,882	111,169	33,432	144,601	90,780	370,263	113,081
Other 4-year (total)	49,152	247,950	9,133	179,864	58,151	544,250	290,182	26,545	316,727	159,196	1,020,173	158,169
Public	34,597	247,033	8,883	2,500	38,754	331,767	127,995	2,133	130,128	40,210	502,105	3,812
Private	14,555	917	250	177,364	19,397	212,483	162,187	24,412	186,599	118,986	518,068	154,357
2-year (total)	1,860	39,504	47,028	13,502	20,461	122,355	48,570	1,105	49,675	21,179	193,209	2,332
Public	1,853	39,504	47,028	729	16,563	105,677	34,327	305	34,632	13,393	153,702	483
Private	7	0	0	12,773	3,898	16,678	14,243	800	15,043	7,786	39,507	1,849
Total Public	93,112	629,882	62,393	30,808	122,583	938,778	456,850	5,488	462,338	205,226	1,606,342	39,407
Total Private	41,103	2,219	300	283,761	36,660	364,043	287,599	58,644	346,243	217,552	927,838	269,287
TOTAL Institutions	134,215	632,101	62,693	314,569	159,243	1,302,821	744,449	64,132	808,581	422,778	2,534,180	308,694

[1] Source: *Higher Education Finances: Selected Trends and Summary Data.* (OE-52009), U.S. Office of Education, 1968, pp. 4–5.

[2] Includes earnings on plant-fund investments and proceeds from sale of plant-fund assets, student fees restricted to use for plant expansion or debt retirement, and other miscellaneous plant-fund income.

[3] In order to reflect total private giving to higher education, private gifts and grants for endowment, student loan, and annuity and living trust funds have been included on this table.

Table H-11—*Current-Fund Expenditures 1963–64* [1]

(in thousands of dollars)

Type of Institution	EXPENDITURES FOR EDUCATIONAL AND GENERAL PURPOSES										Total Expen. for Ed. & Gen. Purposes (Columns 9–10)	Auxiliary Enterprises	Student-Aid Expen.	Total Current-Fund Expen. (Columns 11–13)
	General Admin. & General Expense	Instruction and Depart-mental Research	Extension & Public Service	Libraries	Plant Operation and Mainte-nance	Total (Columns 1–5)	Related Activities	Sales & Service Expen.	Total Expen. excl. Research (Columns 6–8)	Organized Research				
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Universities (total)	435,967	1,484,376	269,462	128,428	337,279	2,655,512	372,035	13,741	3,041,288	1,498,161	4,539,449	720,792	174,567	5,434,808
Public	262,707	981,143	256,734	80,868	218,944	1,800,396	249,467	9,976	2,059,839	898,523	2,958,362	503,553	80,769	3,542,684
Private	173,260	503,233	12,728	47,560	118,335	855,116	122,568	3,765	981,449	599,638	1,581,087	217,239	93,798	1,892,124
Other 4-year (total)	456,316	1,083,273	23,029	96,010	297,497	1,956,125	84,805	90	2,041,020	483,200	2,524,220	655,305	124,812	3,304,337
Public	146,918	522,028	13,182	41,627	132,306	856,061	32,892	90	889,043	37,321	926,364	252,856	28,225	1,207,445
Private	309,398	561,245	9,847	54,383	165,191	1,100,064	51,913	0	1,151,977	445,879	1,597,856	402,449	96,587	2,096,892
2-year (total)	71,930	252,982	5,695	13,412	54,554	398,573	2,619	0	401,192	1,532	402,724	79,130	3,995	485,849
Public	46,409	210,223	5,026	10,499	40,857	313,014	1,973	0	314,987	62	315,049	47,813	1,505	364,367
Private	25,521	42,759	669	2,913	13,697	85,559	646	0	86,205	1,470	87,675	31,317	2,490	121,482
Total Public	456,034	1,713,394	274,942	132,994	392,107	2,969,471	284,332	10,066	3,263,869	935,906	4,199,775	804,222	110,499	5,114,490
Total Private	508,179	1,107,237	23,244	104,856	297,223	2,040,739	175,127	3,765	2,219,631	1,046,987	3,266,618	651,005	192,875	4,110,498
TOTAL Institutions	964,213	2,820,631	298,186	237,858	689,330	5,010,210	459,459	13,831	5,483,500	1,982,893	7,466,393	1,455,227	303,374	9,224,994

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[1] Source: *Higher Education Finances: Selected Trend and Summary Data.* (OE-52009), U.S. Office of Education, 1968, pp. 4–5.

Table H-12—*Plant-Fund Expenditures and Property Values 1963–64* [1]

(in thousands of dollars)

Type of Institution	PLANT-FUND EXPENDITURES			Total Expen. from Plant-Funds (Columns 1–3)	Total Current-Fund Expenditures [3]	Total Current & Plant-Fund Expen. (Columns 4–5)	PROPERTY VALUES AT END OF FISCAL YEAR					
	Additions to Plant	Reduction of Capital Indebtedness	Other Deductions [2]				Total Property Values	Total Plant-Value	Unexpended Plant-Funds	Endowment Funds	Other Non-expendable Funds	Liabilities of Plant-Funds
	1	2	3	4	5	6	7	8	9	10	11	12
Universities (total)	965,226	121,547	112,222	1,198,995	5,434,808	6,633,803	15,924,362	10,806,679	903,424	4,050,459	163,800	1,990,401
Public	659,610	80,246	85,249	825,105	3,542,684	4,367,789	9,515,650	7,532,260	703,101	1,222,994	57,295	1,400,868
Private	305,616	41,301	26,973	373,890	1,892,124	2,260,014	6,408,712	3,274,419	200,323	2,827,465	106,505	589,533
Other 4-year (total)	793,513	82,666	44,116	920,295	3,304,337	4,224,632	12,616,864	9,038,297	570,893	2,832,518	175,158	1,657,849
Public	403,858	29,543	20,603	454,004	1,207,445	1,661,449	4,173,782	3,845,483	278,621	37,863	11,815	603,040
Private	389,655	53,123	23,513	466,291	2,096,892	2,563,183	8,443,082	5,192,814	292,272	2,794,655	163,343	1,054,809
2-year (total)	149,715	17,713	8,356	175,784	485,849	661,633	1,688,164	1,490,775	121,788	71,720	3,882	296,761
Public	118,294	14,336	7,258	139,888	364,367	504,255	1,241,971	1,122,173	104,012	14,813	974	233,168
Private	31,421	3,377	1,098	35,896	121,482	157,378	446,193	368,602	17,776	56,907	2,908	63,593
Total Public	1,181,762	124,125	113,110	1,418,997	5,114,496	6,533,493	14,931,403	12,499,916	1,085,734	1,275,670	70,084	2,237,076
Total Private	726,692	97,801	51,584	876,077	4,110,498	4,986,575	15,297,987	8,835,835	510,371	5,679,027	272,756	1,707,935
TOTAL Institutions	1,908,454	221,926	164,694	2,295,074	9,224,994	11,520,068	30,229,390	21,335,751	1,596,105	6,954,697	342,840	3,945,011

[1] Source: *Higher Education Finances: Selected Trend and Summary Data.* (OE-52009), U.S. Office of Education, 1968, pp. 4–5.

[2] Includes interest on plant indebtedness paid from plant funds, transfers and loans from plant-funds to other institutional funds, and other miscellaneous deductions.

[3] Taken from table H-11, column 14.

Table H-13—*Current-Fund Income 1965-66* [1]

(in thousands of dollars)

Type of Institution	INCOME FOR EDUCATIONAL AND GENERAL PURPOSES										
	Tuition and Fees	Federal Government, Research	Federal Government, other Support	State Governments	Local Governments	Endowment Earnings	Private Gifts & Grants	Other Income [2]	Total Income for Ed. & Gen. Purposes (Columns 1–8)	Other Current-Fund Income [3]	Total Current-Fund Income (Columns 9 & 10)
	1	2	3	4	5	6	7	8	9	10	11
Universities (total)	1,195,420	1,535,158	416,908	1,915,751	33,569	188,469	348,812	509,923	6,144,010	1,296,022	7,440,032
Public	509,413	856,586	302,771	1,844,143	29,300	26,864	142,561	320,395	4,032,033	896,852	4,928,885
Private	686,007	678,572	114,137	71,608	4,269	161,605	206,251	189,528	2,111,977	399,170	2,511,147
Other 4-year (total)	1,299,302	500,968	179,195	856,665	47,014	123,350	273,673	157,515	3,437,682	1,041,943	4,479,625
Public	252,842	37,911	142,548	843,520	43,855	1,947	12,405	45,390	1,380,418	391,210	1,771,628
Private	1,046,460	463,057	36,647	13,145	3,159	121,403	261,268	112,125	2,057,264	650,733	2,707,997
2-year (total)	184,886	1,641	30,105	239,589	237,444	4,474	20,212	40,127	758,478	118,078	876,556
Public	92,204	341	28,038	239,132	237,444	1,138	1,392	35,159	634,848	62,314	697,162
Private	92,682	1,300	2,067	457	0	3,336	18,820	4,968	123,630	55,764	179,394
Total Public	854,459	894,838	473,357	2,926,795	310,599	29,949	156,358	400,944	6,047,299	1,350,376	7,397,675
Total Private	1,825,149	1,142,929	152,851	85,210	7,428	286,344	486,339	306,621	4,292,871	1,105,667	5,398,538
TOTAL Institutions	2,679,608	2,037,767	626,208	3,012,005	318,027	316,293	642,697	707,565	10,340,170	2,456,043	12,796,213

[1] Source: *Financial Statistics of Institutions of Higher Education: Current Funds, Revenues and Expenditures, 1965-66.* (OE-52010-66). U.S. Office of Education, 1969, p. 11.

[2] Includes income from organized activities relating to educational departments, sales and services of educational departments, and other miscellaneous educational and general income.

[3] Includes income from auxiliary enterprises and student-aid income from specifically designated or earmarked funds.

Table H-14—*Plant-Fund Receipts 1965–1966*[1]

(in thousands of dollars)

Type of Institution	DIRECT PLANT-FUND INCOME						PLANT-FUND LOAN RECEIPTS				
	Federal Government 1	State Governments 2	Local Governments 3	Private Gifts & Grants 4	Other[2] Income 5	Total Direct Plant-Fund Income (Columns 1–5) 6	Non-Institutional Sources 7	Institutional Sources 8	Total Plant-Fund Loan Receipts (Columns 7–8) 9	Total Plant-Fund Receipts (Columns 6–9) 10	Private Gifts & Grants for Fund Increases[3] 11
Universities (total)	106,848	423,507	1,667	129,530	215,740	877,292	605,671	39,537	645,208	1,522,500	194,891
Public	70,860	420,219	570	38,900	153,932	684,481	474,703	17,165	491,868	1,176,349	45,575
Private	35,988	3,288	1,097	90,630	61,808	192,811	130,968	22,372	153,340	346,151	149,316
Other 4-year (total)	200,781	233,390	12,281	220,969	137,555	804,976	696,574	34,376	730,950	1,535,926	130,511
Public	165,283	231,019	12,281	4,152	52,985	465,720	328,841	1,534	330,375	796,095	8,623
Private	35,498	2,371	0	216,817	84,570	339,256	367,733	32,842	400,575	739,831	121,888
2-year (total)	26,038	81,842	67,321	15,629	23,099	213,929	211,403	3,643	215,046	428,975	1,682
Public	25,233	81,839	67,321	1,466	17,687	193,546	185,382	195	185,577	379,123	90
Private	805	3	0	14,163	5,412	20,383	26,021	3,448	29,469	49,852	1,592
Total Public	261,376	733,077	80,172	44,518	224.604	1,343,717	988,926	18,894	1,007,820	2,351,567	54,288
Total Private	72,291	5,662	1,097	321,610	151,790	552,450	524,722	58,662	583,384	1,135,834	272,796
TOTAL Institutions	333,667	738,739	81,269	366,128	376,394	1,896,197	1,513,648	77,556	1,591,204	3,487,401	327,084

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[1] Source: *Financial Statistics of Institutions of Higher Education: Property, 1965-66.* (OE-52012-66), U.S. Office of Education, 1969, pp. 7, 9.

[2] Includes earnings on plant-fund investments and proceeds from sale of plant-fund assets, student fees restricted to use for plant expansion or debt retirement, and other plant-fund income. In addition, it should be noted that the 1965-66 HEGIS Survey did not include a separate question on transfers to the plant-funds. For this reason, transfers from other funds have been reported under receipts from all "other sources."

[3] In order to reflect total private giving to higher education, private gifts for endowment, student loan, and annuity and living trust funds have been included on this table.

TABLE H-15—*Current-Fund Expenditures 1965–66* [1]

(in thousands of dollars)

Type of Institution	EXPENDITURES FOR EDUCATIONAL AND GENERAL PURPOSES													
	General Admin. & General Expense	Instruction and Departmental Research	Extension & Public Service	Libraries	Plant Operation and Maintenance	Total (Columns 1–5)	Other Expen.[2]	Total Expen. excl. Research (Columns 6–7)	Organized Research	Total Expen. for Ed. & Gen. Purposes (Columns 8–9)	Auxiliary Enterprises	Student-Aid Expen.	Current Funds for Physical Plant Assets [3]	Total Current-Fund Expen. (Columns 10–13)
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Universities (total)	551,184	1,997,330	382,002	182,303	419,595	3,532,414	637,150	4,169,564	1,926,479	6,096,043	959,879	265,286	70,693	7,391,901
Public	323,800	1,338,660	358,084	113,739	272,383	2,406,666	434,826	2,841,492	1,101,027	3,942,519	671,058	118,974	43,788	4,776,339
Private	227,384	658,670	23,918	68,564	147,212	1,125,748	202,324	1,328,072	825,452	2,153,524	288,821	146,312	26,905	2,615,562
Other 4-year (total)	584,410	1,390,929	40,243	138,059	348,983	2,502,624	206,250	2,708,874	525,188	3,234,062	838,326	154,644	129,490	4,356,522
Public	201,725	696,324	19,307	65,063	157,379	1,139,798	106,511	1,246,309	48,352	1,294,661	320,317	32,243	37,037	1,684,258
Private	382,685	694,605	20,936	72,996	191,604	1,362,826	99,739	1,462,565	476,836	1,939,401	518,009	122,401	92,453	2,672,264
2-year (total)	124,343	392,451	20,472	27,283	79,237	643,786	28,791	672,577	1,315	673,892	92,880	9,296	45,452	821,520
Public	88,914	341,507	19,070	22,451	62,093	534,035	23,773	557,808	264	558,072	52,704	5,223	38,106	654,105
Private	35,429	50,944	1,402	4,832	17,144	109,751	5,018	114,769	1,051	115,820	40,176	4,073	7,346	167,415
Total Public	614,439	2,376,491	396,461	201,253	491,855	4,080,499	565,110	4,645,609	1,149,643	5,795,252	1,044,079	156,440	118,931	7,114,702
Total Private	645,498	1,404,219	46,256	146,392	355,960	2,598,325	307,081	2,905,406	1,303,339	4,208,745	847,006	272,786	126,704	5,455,241
TOTAL Institutions	1,259,937	3,780,710	442,717	347,645	847,815	6,678,824	872,191	7,551,015	2,452,982	10,003,997	1,891,085	429,226	245,635	12,569,943

[1] Source: *Financial Statistics of Institutions of Higher Education: Current Funds, Revenues, Expenditures, 1965–66.* (OE-52010-66), U.S. Office of Education, 1969, pp. 12–13.

[2] The categories of the 1965-66 HEGIS expenditure reports were changed slightly from previous years. The "other" expenditures include outlays for organized activities relating to educational departments, other sponsored activities which in previous surveys were not reported separately, and all other miscellaneous expenditures.

[3] Expenditures from current funds for physical plant assets is a new category added to the 1965-66 report. Prior to 1965 these expenditures were included, depending on their purpose, in other educational and general expenditure categories.

TABLE H-16.—*Plant-Fund Expenditures and Property Values 1965–66*[1]

(in thousands of dollars)

Type of Institution	PLANT-FUND EXPENDITURES			Total Expen. from Plant-Funds (Columns 1–3)	Total Current-Fund Expenditures[4]	Total Current & Plant-Fund Expen. (Columns 4–5)	PROPERTY VALUES AT END OF FISCAL YEAR					
	Additions to Plant[2]	Reduction of Capital Indebtedness	Other Deductions[3]				Total Property Values	Total Plant-Value	Unexpended Plant-Funds	Endowment Funds	Other Non-expendable Funds	Liabilities of Plant-Funds
	1	2	3	4	5	6	7	8	9	10	11	12
Universities (total)	1,220,183	164,875	175,017	1,560,075	7,391,901	8,951,976	NA	13,368,190	NA	5,658,224	NA	2,970,647
Public	935,686	102,542	133,126	1,171,354	4,776,339	5,947,693	NA	9,298,776	NA	1,723,910	NA	2,234,342
Private	284,497	62,333	41,891	388,721	2,615,562	3,004,283	NA	4,069,414	NA	3,934,314	NA	736,305
Other 4-year (total)	1,130,366	161,469	68,876	1,360,711	4,356,522	5,717,233	NA	11,331,214	NA	3,017,613	NA	2,504,624
Public	569,389	59,144	32,125	660,658	1,684,258	2,344,916	NA	4,882,426	NA	99,889	NA	933,121
Private	560,977	102,325	36,751	700,053	2,672,264	3,372,317	NA	6,448,788	NA	2,917,724	NA	1,571,503
2-year (total)	255,002	27,909	13,107	296,018	821,520	1,117,538	NA	2,216,267	NA	92,156	NA	605,576
Public	217,263	18,891	11,308	247,462	654,105	901,567	NA	1,686,817	NA	21,684	NA	482,107
Private	37,739	9,018	1,799	48,556	167,415	215,971	NA	529,450	NA	70,472	NA	123,469
Total Public	1,722,338	180,577	176,559	2,079,474	7,114,702	9,194,176	NA	15,868,019	NA	1,845,483	NA	3,649,570
Total Private	883,213	173,676	80,441	1,137,330	5,455,241	6,592,571	NA	11,047,652	NA	6,922,510	NA	2,431,277
TOTAL Institutions	2,605,551	354,253	257,000	3,216,804	12,569,943	15,786,747	NA	26,915,671	NA	8,767,993	NA	6,080,847

[1] Source: *Financial Statistics of Institutions of Higher Education: Property, 1965-66.* (OE-52012-66). U.S. Office of Education, 1969, pp. 11, 13, 14.

[2] Excludes expenditures from current funds for physical plant assets. (See table H-15, column 13)

[3] Data on "other deductions" were not collected on the 1965–66 HEGIS Survey. For this reason, the other deductions from plant-funds have been estimated on the basis of 1959 to 1964 trends.

[4] Taken from table H-15, column 14.

NA—Not available.

TABLE H-17—*Current-Fund Income 1966–67* [1]

(in thousands of dollars)

Type of Institution	INCOME FOR EDUCATIONAL AND GENERAL PURPOSES								Total Income for Ed. & Gen. Purposes (Columns 1–8)	Other Current-Fund Income [3]	Total Current Fund Income (Columns 9 & 10)
	Tuition and Fees	Federal Government, Research	Federal Government, other Support	State Governments	Local Governments	Endowment Earnings	Private Gifts & Grants	Other Income [2]			
	1	2	3	4	5	6	7	8	9	10	11
Universities (total)	1,323,889	1,831,268	525,874	2,046,578	74,460	191,348	420,716	803,234	7,217,367	1,341,540	8,558,907
Public	581,226	924,847	369,516	1,974,760	52,232	27,890	169,430	535,672	4,635,573	923,068	5,558,641
Private	742,663	906,421	156,358	71,818	22,228	163,458	251,286	267,562	2,581,794	418,472	3,000,266
Other 4-year (total)	1,436,430	385,038	269,922	1,034,473	52,775	132,340	320,623	212,507	3,844,108	1,168,712	5,012,820
Public	299,883	47,652	199,773	1,021,152	50,470	2,356	23,302	73,293	1,717,881	487,319	2,205,200
Private	1,136,547	337,386	70,149	13,321	2,305	129,984	297,321	139,214	2,126,227	681,393	2,807,620
2-year (total)	222,150	1,755	47,425	290,977	311,877	4,689	26,529	19,090	924,492	136,628	1,061,120
Public	116,310	234	43,040	290,600	311,293	1,260	2,959	15,057	780,753	77,832	858,585
Private	105,840	1,521	4,385	377	584	3,429	23,570	4,033	143,739	58,796	202,535
Total Public	997,419	972,733	612,329	3,286,512	413,995	31,506	195,691	624,022	7,134,207	1,488,219	8,622,426
Total Private	1,985,050	1,245,328	230,892	85,516	25,117	296,871	572,177	410,809	4,851,760	1,158,661	6,010,421
TOTAL Institutions	2,982,469	2,218,061	843,221	3,372,028	439,112	328,377	767,868	1,034,831	11,985,967	2,646,880	14,632,847

[1] Source: Preliminary and unpublished results of the 1966–67 Higher Education General Information Survey. Office of Education, National Center for Educational Statistics.

[2] The categories on the 1966-67 Survey form included in the "other" income category are: other separately budgeted research, hospitals—public service only, other organized activities of educational departments, sales and services of educational departments, and other educational and general income.

[3] Includes income from auxiliary enterprises and student-aid income from specifically designated or earmarked funds.

TABLE H-18—*Plant-Fund Receipts 1966–67* [1]

(in thousands of dollars)

Type of Institution	DIRECT PLANT-FUND INCOME					Total Direct Plant-Fund Income (Columns 1–5)	PLANT-FUND LOAN RECEIPTS			Transfers from Other Funds & Other Income [3]	Total Plant-Fund Receipts (Columns 6, 9, 10)	Private Gifts & Grants for Fund Increases [4]
	Federal Government	State Governments	Local Governments	Private Gifts & Grants	Other Income [2]		Non-Institutional Sources	Institutional Sources	Total Plant-Fund Loan Receipts (Columns 7–8)			
	1	2	3	4	5	6	7	8	9	10	11	12
Universities (total)	155,071	332,675	1,796	146,869	82,122	718,533	737,904	43,903	781,807	261,887	1,762,227	209,514
Public	104,628	317,723	1,746	32,420	67,500	524,017	614,595	13,777	628,372	165,061	1,317,450	44,057
Private	50,443	14,952	50	114,449	14,622	194,516	123,309	32,126	153,435	96,826	444,777	165,457
Other 4-year (total)	89,960	232,154	2,925	191,216	61,323	577,578	867,628	37,522	905,150	171,298	1,654,026	137,092
Public	44,345	230,463	2,879	3,281	39,738	320,706	438,009	1,346	439,355	50,193	810,254	10,922
Private	45,615	1,691	46	187,935	21,585	256,872	429,619	36,176	465,795	121,105	843,772	126,170
2-year (total)	44,071	74,346	85,229	17,578	11,970	233,194	211,528	3,297	214,825	40,001	488,020	2,387
Public	41,398	74,175	84,951	3,671	10,568	214,763	173,900	805	174,705	34,510	423,978	331
Private	2,673	171	278	13,907	1,402	18,431	37,628	2,492	40,120	5,491	64,042	2,056
Total Public	190,371	622,361	89,576	39,372	117,806	1,059,486	1,226,504	15,928	1,242,432	249,764	2,551,682	55,310
Total Private	98,731	16,814	374	316,291	37,609	469,819	590,556	68,794	659,350	223,422	1,352,591	293,683
TOTAL Institutions	289,102	639,175	89,950	355,663	155,415	1,529,305	1,817,060	84,722	1,901,782	473,186	3,904,273	348,993

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[1] Source: Preliminary and unpublished results of the 1966-67 Higher Education General Information Survey. Office of Education, National Center for Educational Statistics.

[2] Includes earnings on plant-fund investments and designated student fees restricted to use for plant-expansion or debt retirement. It should be noted that the reporting format of the 1966-67 changed from prior years. For this reason, a portion of the "Other Income" as reported in prior years is now included with the "transfer from other funds" category. (See column 10)

[3] Includes transfers from other funds and income from all other sources not included in "Other Income." (See column 5)

[4] In order to reflect total private giving to higher education, private gifts and grants for endowment, student loan, and annuity and living trust funds have been included in this table.

Table H-19—*Current-Fund Expenditures 1966–67* [1]

(in thousands of dollars)

Type of Institution	EXPENDITURES FOR EDUCATIONAL AND GENERAL PURPOSES													
	General Admin. & General Expense	Instruction and Departmental Research	Extension & Public Service	Libraries	Plant Operation and Maintenance	Total (Columns 1–5)	Other Expen. [2]	Total Expen. excl. Research (Columns 6–7)	Organized Research	Total Expen. for Ed. & Gen. Purposes (Columns 8–9)	Auxiliary Enterprises	Student-Aid Expen.	Current Funds for Physical Plant Assets [3]	Total Current-Fund Expen. (Columns 10–13)
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Universities (total)	621,103	2,269,006	398,282	213,879	471,930	3,974,200	868,458	4,842,658	2,118,167	6,960,825	1,033,353	356,234	92,513	8,442,925
Public	375,545	1,532,787	369,036	133,373	311,598	2,722,339	595,469	3,317,808	1,161,407	4,479,215	726,878	178,267	60,908	5,445,268
Private	245,558	736,219	29,246	80,506	160,332	1,251,861	272,989	1,524,850	956,760	2,481,610	306,475	177,967	31,605	2,997,657
Other 4-year (total)	682,080	1,632,517	66,545	167,194	401,305	2,949,641	269,333	3,218,974	401,468	3,620,442	919,992	216,273	99,635	4,856,342
Public	254,718	860,844	31,065	82,026	192,970	1,421,623	143,632	1,565,255	57,486	1,622,741	383,441	63,175	35,361	2,104,718
Private	427,362	771,673	35,480	85,168	208,335	1,528,018	125,701	1,653,719	343,982	1,997,701	536,551	153,098	64,274	2,751,624
2-year (total)	152,602	483,620	20,493	36,592	100,168	793,475	33,833	827,308	1,402	828,710	110,838	14,847	48,244	1,002,639
Public	108,931	426,452	19,120	30,623	80,167	665,293	28,531	693,824	325	694,149	66,109	10,047	41,166	811,471
Private	43,671	57,168	1,373	5,969	20,001	128,182	5,302	133,484	1,077	134,561	44,729	4,800	7,078	191,168
Total Public	739,194	2,820,083	419,221	246,022	584,735	4,809,255	767,632	5,576,887	1,219,218	6,796,105	1,176,428	251,489	137,435	8,361,457
Total Private	716,591	1,565,060	66,099	171,643	388,668	2,908,061	403,992	3,312,053	1,301,819	4,613,872	887,755	335,865	102,957	5,940,449
TOTAL Institutions	1,455,785	4,385,143	485,320	417,665	973,403	7,717,316	1,171,624	8,888,940	2,521,037	11,409,977	2,064,183	587,354	240,392	14,301,906

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[1] Source: Preliminary and unpublished results of the 1966-67 Higher Education General Information Survey. Office of Education, National Center for Educational Statistics.

[2] The categories of the 1965-66 and 1966-67 HEGIS expenditure reports were changed slightly from previous years. The "other" expenditures include outlays for organized activities relating to educational departments, other sponsored activities which in surveys prior to 1965 were not reported separately, and all other miscellaneous expenditures.

[3] Expenditures from current funds for physical plant assets is a new category added to the 1965-66 and 1966-67 reports. Prior to 1965 these expenditures were included, depending on their purpose, in other educational and general expenditure categories.

TABLE H-20—*Plant-Fund Expenditures and Property Values—1966-67* [1]

(in thousands of dollars)

Type of Institution	PLANT-FUND EXPENDITURES			Total Expen. from Plant-Funds (Columns 1–3)	Total Current-Fund Expenditures [4]	Total Current & Plant-Fund Expen. (Columns 4–5)	PROPERTY VALUES AT END OF FISCAL YEAR					
	Additions to Plant [2]	Reduction of Capital Indebtedness	Other Deductions [3]				Total Property Values	Total Plant-Value	Unexpended Plant-Funds	Endowment Funds	Other Non-expendable Funds	Liabilities of Plant-Funds
	1	2	3	4	5	6	7	8	9	10	11	12
Universities (total)	1,529,541	269,365	240,393	2,039,299	8,442,925	10,482,224	NA	14,992,656	NA	5,640,608	NA	3,589,852
Public	1,137,459	203,122	182,854	1,523,435	5,445,268	6,968,703	NA	10,408,775	NA	1,542,007	NA	2,749,032
Private	392,082	66,243	57,539	515,864	2,997,657	3,513,521	NA	4,583,881	NA	4,098,601	NA	840,820
Other 4-year (total)	1,385,769	256,779	94,604	1,737,152	4,856,342	6,593,494	NA	12,717,373	NA	3,296,163	NA	3,352,887
Public	733,952	132,862	44,125	910,939	2,104,718	3,015,657	NA	5,732,525	NA	69,822	NA	1,516,835
Private	651,817	123,917	50,479	826,213	2,751,624	3,577,837	NA	6,984,848	NA	3,226,341	NA	1,836,052
2-year (total)	354,560	58,522	18,003	431,085	1,002,639	1,433,724	NA	2,670,712	NA	95,591	NA	882,574
Public	304,818	45,894	15,532	366,244	811,471	1,177,715	NA	2,089,608	NA	21,566	NA	747,665
Private	49,742	12,628	2,471	64,841	191,168	256,009	NA	581,104	NA	74,025	NA	134,909
Total Public	2,176,229	381,878	242,511	2,800,618	8,361,457	11,162,075	NA	18,230,908	NA	1,633,395	NA	5,013,532
Total Private	1,093,641	202,788	110,489	1,406,918	5,940,449	7,347,367	NA	12,149,833	NA	7,398,967	NA	2,811,781
TOTAL Institutions	3,269,870	584,666	353,000	4,207,536	14,301,906	18,509,442	NA	30,380,741	NA	9,032,362	NA	7,825,313

[1] Source: Preliminary and unpublished results of the 1966-67 Higher Education General Information Survey. Office of Education, National Center for Educational Statistics.

[2] Excludes expenditures from current funds for physical plant assets. (See table H-19, column 13)

[3] Data on "other deductions" was not collected on the 1965-66 and 1966-67 HEGIS Surveys. For this reason, the other deductions from plant-funds have been estimated on the basis of 1959 to 1964 trends.

[4] Taken from table H-19, column 14.

NA—Not available.

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The Role of the Junior College in Providing Postsecondary Education for All

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INTRODUCTION

The explosive impact of the junior college movement today stands as vivid testimony to the speed with which some kinds of changes are being accomplished in education.

Much is involved in "providing postsecondary education for all." Perhaps the most realistic way to predict the future capacity of the junior college to accomplish this task is to assess present progress toward this goal. To what extent are junior colleges committed to the mission of universal education beyond high school? How well are they doing?

These questions will be discussed in three sections. Section I will attempt to outline the criteria for evaluating the progress of the junior colleges in providing postsecondary education for all. Section II will analyze the mission of the junior colleges as defined by State master plans, leaders in the junior college movement, and attitudes of faculty and staff who implement the goals. Section III will analyze the performance of the colleges in meeting the criteria related to the goal of universal higher education.

I. CRITERIA FOR EVALUATING PROGRESS

A national goal of postsecondary education for all involves, initially, the removal of barriers. The obvious barriers that limit educational opportunities are financial, geographical, and those related to personal characteristics, such as race, sex, socioeconomic background, and educational qualifications. Although it is not usually spoken of as a barrier, an educational program which does not meet the needs of students is truly a barrier to learning if not to admission. Hence the appropriateness of the educational program for varied individuals must be evaluated if we are to move toward an ideal of universal postsecondary education.

If we take seriously all that has been written about the junior colleges, then the removal of these barriers is what the junior college movement is all about. The four characteristics most often used to describe the mission of public junior colleges can be stated in a single sentence. They are low cost, open-door, multipurpose colleges situated within commuting distance of the populace they serve. These conditions are so characteristic of our present universal secondary education system that they are taken for granted. At the same time, they are such basic departures from tradition in higher education that they encounter the resistance of old habits to new ways of thinking about higher education.

When the criteria are made explicit, some evaluation of the progress of the 2-year college system is possible. We can determine with reasonable accuracy the extent to which the Nation's junior colleges are located near the people they are to serve, and thus it is possible to obtain an evaluation of the effectiveness of the junior colleges in removing geographical barriers. Evaluation of the removal of financial barriers is more difficult, since it involves not only objective actual costs but also subjective perceived costs.

More difficult still is the evaluation of progress in the removal of obstacles related to personal characteristics. These, obviously, may be more motivational than discriminatory. How open is the door of the community college? Despite the objective fact that overt restrictions on sex, age, race, and other grounds are virtually nonexistent in public junior colleges, research shows that these barriers can be the most subtle and persistent of all and that they have their roots in the attitudes and values of society.

Finally, we can describe the manifest characteristics of students, and we can try to design educational experiences to meet their needs for development. We can examine how successful the educational programs of the junior colleges are in providing for the needs of the population they are serving.

Importance of Removing Geographical Barriers

Research has documented geographical location as a crucial factor in moving toward a national goal of universal education beyond high school. Medsker and Trent (1965) found that accessibility to a junior college significantly increased the number of high school graduates attending college. Location was found especially important for students from low socioeconomic backgrounds, and community colleges had more appeal for this group than any other type of college. For high ability students from families where the fathers were employed at a low occupational level, attendance rates varied from 22 percent in communities without any college to 53 percent in communities with a public junior college. Even more dramatic was the finding in a Florida community: before the establishment of a junior college, 8 percent of the high school graduates entered college; after the community college was established, the 8 percent still went away to college, but an additional 40 percent were attending the local junior college.[1]

Research of a different nature pinpoints more precisely the effects of location. The Florida State Department of Education found that enrollment begins to decline when potential students live more than 15 miles away from the campus and that the drawing power of the community college is almost nonexistent after 35 miles.[2] From still another standpoint, research is virtually unanimous in concluding that students give "nearness to home" as a primary reason for attending community colleges.[3] Thus, the importance of removing geographical barriers as a step toward a goal of postsecondary education for all can be conclusively demonstrated by research.

Importance of Removing Financial Barriers

Although the research on cost as a barrier to universal postsecondary education is not as clear-cut as that for geographic barriers, it, too, is persuasive. It is probably safe to say that most of the research on cost underestimates its importance, since research samples typically underrepresent part-time working students. It is these students for whom cost factors are probably most critical, and part-time students are woefully understudied.

In a careful analysis of student financial need in the California system of higher education, investigators calculated "need" as the cost of education beyond what could be expected from family contributions and students' summer employment. They concluded that of students in the three public segments of higher education in California—universities, State colleges, and junior colleges—students attending junior colleges demonstrated the greatest need. They estimated that 42 percent of the students planning to enroll in community colleges in 1967–68 were in need of funding beyond their own immediate resources. For the State colleges the comparable proportion was 24 percent and for the higher-cost universities the proportion was 33 percent. Their recommendation for student grants in preference to loans took into consideration the research data indicating that community college students are from the "lowest income group of the college-attenders in California, least willing (and presumably least able) to borrow, and least likely of the total college-going population to enter an occupation with the high potential earning capacity that easily supports loan repayment."[4]

A synthesis of many recent studies revealed that 2-year colleges are presently serving a portion of the population for whom money is a primary concern.[5] When such college students are compared with senior college students, research demonstrates the 2-year college students are more likely to (1) come from lower socioeconomic homes, (2) work while attending college, and (3) give high priority to the low cost of the junior colleges.

Importance of Removing Barriers Based Upon Personal Characteristics

Most stubborn of the barriers to universal postsecondary education are the subtle and insidious motivational barriers associated with personal characteristics. The better recognized problems are those of race, age, and sex. Closely associated with race, but not always dependent upon it, are the pervasive discriminations attendant upon socioeconomic status factors such as parental occupation, education, and income. Research indicates that even if we could remove financial and geographical barriers for every prospective student, we would still have an enormous problem in bringing about the ideal of universal postsecondary education. We would find the following groups underrepresented in the college-going population: racial minorities, women, and the children of parents of low educational and occupational status.

Such discriminations are commonly believed to be inherent in our society, rather than in the educational system *per se,* but this interpretation is perhaps too easy. There is probably no public junior college that overtly discriminates on the basis of race, and yet there are many colleges whose open doors fail to swing wide enough to admit those who do not "seek" further education, those who are not "qualified," or those who are not motivated to the academically oriented curriculums that characterize most 2-year colleges.

Postsecondary education, in short, is not now equally available to all. Minority groups, women, and the poor are less likely to seek higher education and are a smaller part of the college-going population.

Providing Appropriate Educational Experiences

Our educational system is based upon a model which rewards one kind of achievement, and that is academic. There is little recognition for achievements that are not oriented toward traditional classroom activities. Children who do not achieve in the academic areas suffer diminished self-esteem and, studies indicate, fail to develop their full potential in other directions. Students not now enrolled in any type of postsecondary education score much lower on traditional measures of academic ability, and they score lower on tests of intellectual interest. In contrast to the college-going group, high school seniors who do not continue their education feel that their past education has not prepared them especially well for their postsecondary futures.[6] If postsecondary education for all is to be a national goal, then education cannot continue to be more of the same. Many high school graduates not continuing their education are quick to recognize that it holds little of value for them.

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[1] Auburn University, School of Education, *Meeting Educational Needs For Post High School Age Youth and Adults in Alabama.* (A report of conferences held at Auburn University on Vocational, Technical, and Junior College Education.) Auburn, Alabama: Auburn University, 1964.

[2] Florida State Department of Education, *The Community Junior College in Florida's Future.* Tallahasse: Florida State Department of Education, 1957.

[3] K. P. Cross, *The Junior College Student: A Research Description.* Princeton, New Jersey: Educational Testing Service, 1968.

[4] Coordinating Council for Higher Education, *Financial Assistance Programs for California College and University Students.* Staff report 67–13 by Charles McIntyre and John Smart. Sacramento: CCHE, 1967.

[5] K. P. Cross, *op. cit.*

[6] *Ibid.*

II. MISSION OF THE JUNIOR COLLEGES

How close the junior colleges come to meeting the criteria for expanding postsecondary educational opportunities depends in large measure on what those who determine policy think the role of such colleges should be. This includes three sources of power and influence—State master planners, leaders of the "junior college movement," and junior college faculty and staff members.

Role of Junior Colleges as Outlined in State Master Plans

Reading State master plans is a little like reading college catalogs. The prose is not always related to the practice. One researcher has noted that planning in higher education is "applied to everything from deciding what will be done tomorrow to attempting to establish a coherent statewide system of higher education . . . over the next 10 to 20 years . . . and there is a significant gap between the rhetoric and the reality."[7]

Nevertheless, the reality seems to be that, according to Livesay and Palola, "increasingly . . . planning is viewed as the main process through which critical decisions are made about the future ends and means of higher education."[8] The pace of statewide planning has accelerated rapidly since 1960. Sixteen States have full or quasi-master plans and 15 more are in the process of developing them. Only 11 States have no master plans or statewide studies that might serve as a basis for them.

Medsker notes that community college growth and development have been greatest in the States with carefully outlined plans for 2-year colleges, and that there is a trend toward ever increasing State involvement in the development of community colleges. Despite the fact that "the largest segment in each master plan is devoted, in one way or another, to developing some system of 2-year institutions," it is almost impossible to arrive at a national picture of junior college progress by reading State master plans.[9] However, some broad themes run throughout.

Virtually all master plans subscribe to the notion that there is a need for diversity in the types of institutions in the State, and the 2-year college is increasingly accorded an identity of its own. It is neither a glorified high school nor an embryonic 4-year college.

Typically, a broad range of purposes is conceived for the community colleges. Plans call for programs offering the following: (1) the first 2 years of college work for those desiring and able to transfer to 4-year colleges and universities; (2) occupational education and training programs that are needed by the students and the community; (3) general education programs for all citizens in the community; (4) services to contribute to the cultural and economic welfare of the community; (5) guidance and counseling services to assist youths and adults to fit better into a constantly changing society.

In specific terms of the criteria against which we can measure the progress of community colleges in providing postsecondary education for all, it should be noted that the common aspiration of State plans seems to be to place 2-year institutions within commuting distance of from 85 percent to 100 percent of the residents.[10] From a practical point of view, however, many of the plans suggest that before a community college is established, there must be a minimum potential enrollment of from 250 (New Mexico) to 1,000 (Ohio). Nevertheless, it can be concluded that master planners do recognize the importance of removing geographical barriers to higher education.

There is also unanimous recognition of the need for removing financial barriers, but the means to this end show considerable variation. As Hurlburt noted:

> At the one end of the continuum is California, with the tradition of tuition-free higher education, based on the belief that it is in the best interests of the State. At the opposite end is New Hampshire, which takes a stand against low tuition rates as being a subsidy to all students whether they need it or not. Most States are in between; they charge as little tuition as they consider feasible, accompanied in most cases by plans to offset any abnormal hardship caused by even moderate tuition.[11]

A section recommending scholarships or guaranteed loans, or both, generally accompanies any discussion of student tuition. While there appears to be every intention of keeping the costs low, there are also some interesting ideas on what constitutes a legitimate cost to the taxpayer. Many plans suggest that student fees should cover the cost of operation for noninstructional services. For example, Oregon does not recommend the use of State funds for student personnel facilities or for spectator sports. The responsibility of the State in providing education for its own residents can be seen in the generally accepted idea that nonresidents should be charged considerably more than residents. It becomes clear that the dedication of State master planners to removing financial barriers is tempered by political and fiscal realities.

How do State master plans measure up to the criterion of removing barriers based upon the personal characteristics of race, age, sex, etc.? The "open door" has total acceptance if the term is broadly interpreted to mean that admissions are not competitive. But according to Hurlburt, "The one stated limitation is that educational opportunities be made available commensurate with the individual's ability to profit from them. In other words, opportunities should be open, not indiscriminantly, but to those who seek them and can benefit from them."[12] Much of the recent research indicates that substantial segments of the population may not "seek" education beyond high school. If this is the case, then a barrier to postsecondary education continues to exist in State plans. Knoell observes that because the community colleges see themselves as "open door," they have rarely seen the need for active recruitment of new students.[13] However, some leading 2-year colleges have launched vigorous programs aimed at recruitment of the disadvantaged and such efforts have been endorsed by the American Association of Junior Colleges. Reflection of the practice appears not to have made its way into the prose of master planners. Nevertheless, the fact that there is attention in State plans to locating community colleges in population centers means that the opportunities for racial minorities are increased to a considerable extent.

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[7] R. O. Berdahl, *Statewide Systems of Higher Education.* Washington, D.C.: American Council on Education, in press.

[8] L. Livesay and E. Palola, "Statewide Planning for Higher Education," in *Encyclopedia of Education.* New York: Macmillan, in press.

[9] L. Mayhew, *Institutional, State and Regional Long-Range Planning.* Washington, D.C.: Government Printing Office, 1969.

[10] A. S. Hurlburt, *State Master Plans for Community Colleges.* Washington, D.C.: American Association of Junior Colleges, in press. Most of the summary information presented regarding the content of master plans has been adapted from this analysis.

[11] *Ibid.*

[12] *Ibid.*

State plans generally do give explicit support to continuing education for adults. In addition to providing appropriate courses and schedules for adults, the community orientation of the community colleges should assist in lowering the covert discriminations against age in providing postsecondary education for all.

There appears to be no concern in the State plans with removing the barriers to higher education for women. Women constitute only 39 percent of the junior college population. While the low percentage has remained quite steady for 2-year colleges during the years 1960–68, women have shown some gain in the 4-year institutions, moving from 37 percent in 1960 to 41 percent in 1968.[14]

State plans tend to be lukewarm in their sense of mission regarding the removal of motivational barriers based on race, age, or sex. Recruitment of racial minorities and women is limited. While they do not actively recruit adults, their attention to community involvement and their provision of specific adult-oriented programs probably have the effect of moderating age barriers.

The State master plans are universally concerned with offering a diversity of opportunity, both in the type of institutions in the State and in the curriculums. Attention to providing a diversity of courses appropriate for the needs of the learner has been one of the hallmarks of the community college movement. State plans recognize the need for liberal arts education, general education, technical and vocational education, and continuing education. They also accord counseling and guidance a more prominent role in the community college than they do in the 4-year institutions. To their credit, many State plans have noted the need for compensatory or developmental education but, when mentioned, it is more with the hope that the community college can deal with it rather than with specific formulations for doing so. While there may be some question as to how well the programs are meeting the educational needs of individuals, there is obviously a sense of mission among State planners toward appropriate and diversified education beyond high school.

Overall, these master plans see a mission for comprehensive community colleges that is in agreement with our criteria for providing postsecondary education for all. They are explicit about removing geographical and financial barriers. They agree in principle that every individual should have an equal opportunity to postsecondary education appropriate to his needs. But there is little information in the plans about specific ways for motivating those who have been underrepresented in the college population.

Role of the Community College as Propounded by Leaders

Future directions of the 2-year colleges are influenced to a large extent by a small band of leaders in the movement. Not only do they serve as consultants for master plans, but they also have a wide sphere of influence through highly visible administrative posts, writing, speaking, and consulting with individual colleges. In addition, many of them teach the future generation of community college administrators, and others determine the nature of research and services of organizations such as the American Association of Junior Colleges. Their perspective on the mission of the community college is of considerable importance.

The leadership in this movement appears to be considerably more influential than any national leadership in 4-year colleges and universities. This is due in part to the relative youth of the movement, i.e., there are not many who have had long years of training or experience in the field. Then, too, community colleges seem to feel more a sense of esprit. It is therefore not surprising that the leaders espouse the role of the community college in providing postsecondary education for all to an extent not seen in State plans or in the faculty, as we shall see later.

A review of the vast amount of literature which seeks to set the directions for the 2-year colleges is beyond the purview of this study. Perhaps the first paragraphs of the introduction to *American Junior Colleges,* by Edmund Gleazer, Executive Director of the American Association of Junior Colleges, state a well-accepted viewpoint regarding the role of community colleges in providing postsecondary education for all:

> No type of collegiate institution figures more importantly in society's goal to educate the many as well as the few than the American junior college. By a variety of means, the junior college is expanding and extending opportunity for education beyond the high school. Availability of at least 2 years of higher education—as demanded by educational groups, two U.S. presidents, and citizens themselves—is coming closer to reality.
>
> Planners of 2-year institutions have come to realize that college may mean many things to many people, that if all those who can benefit from academic study are to be accommodated they must be provided with study and training appropriate to their needs, interests, abilities, and aspirations.[15]

Leaders of reform and innovation have always been visionaries unfettered by the day-to-day demands of dealing with practical details, and it is not surprising that they, more than any other group, appear dedicated to removing all barriers to universal postsecondary education.

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[13] D. M. Knoell, *A Study of the College-going Behavior of Urban High School Graduates With Particular Attention to Black Youth Not Now in College.* Washington, D.C.: American Association of Junior Colleges, April 1969. Mimeographed.

[14] American Council on Education, *A Fact Book on Higher Education, Enrollment data.* Washington, D.C.: ACE, 1969.

[15] E. J. Gleazer, ed., *American Junior Colleges.* Washington, D.C.: American Council on Education, 1967, p. 3.

Role of Community Colleges as Perceived by Faculty

While State agencies may plan certain roles for the community colleges and while leaders may exhort, the mission is carried out by faculty. Their views may have more immediate impact than any other force. A survey of faculty attitudes by Medsker used a questionnaire to measure faculty attitudes about the role of the community college. It was administered to some 3,900 full-time faculty members in 57 junior colleges.

In the answers of faculty, it is apparent that the community colleges have made tremendous progress in establishing a separate identity for themselves. It is equally apparent that much of the traditional thinking about higher education lingers in faculty attitudes. While 90 percent of the faculty endorse the transfer program and 85 percent agree that the 2-year technical curriculums are essential, the further the suggestions stray from the degree programs, the more dubious the faculty become. Only 50 percent feel the occupational curriculums for skilled and semiskilled trades are essential, and only 21 percent are wholehearted in their support for the occupational programs that are of less than two years' duration. Actually, 26 percent of the faculty think that the latter programs are inappropriate for the community colleges.

Evidence of the pull of tradition is also found in attitudes regarding adult education. While 61 percent feel that adult courses in the humanities, social sciences, and natural sciences are essential, only 36 percent are equally supportive of courses in parent education, investments, public affairs, etc. One might argue that the latter courses could come closer to meeting the "needs" of the adults in the community than the more traditional discipline-oriented courses of higher education.

It is not surprising that faculty are unable to get away from their concern with "standards" and "quality." Forty-nine percent think there is too much stress on the quantity of students and not enough stress on the quality. Despite the almost unanimous agreement in State plans that junior colleges should admit any high school graduate, 45 percent of the faculty disagree. Yet, when the traditional criteria of tests and past performance are introduced, 88 percent agree that those who may reasonably be expected to succeed on the basis of these predictors should be admitted to the junior college. As increasing numbers of poor and marginal students enter these colleges, faculty may change their attitudes regarding remediation. But in 1966, only 49 percent felt that remedial high school level courses were essential, 34 percent thought that they should be optional, and 16 percent thought them inappropriate. Although faculty may have some reservations about the means, they are hearty in their endorsement of the philosophy of the community college as a flexible institution that should be unhampered by conventional notions of what constitutes higher education, and 84 percent agree that one of the big advantages of the junior college is that students can explore college without large losses of time, money, and fear of failure.

Some further evidence of how far the junior colleges have come in implementing their philosophy is found in research conducted by the American Council on Education.[16] Faculty in such colleges have good reason for thinking that there is a different reward system from that found in 4-year colleges and universities; this knowledge should influence their behavior. When some 1,110 academic deans were asked how they evaluated teachers, 98 percent of the junior college deans said that classroom teaching was a major factor, and only 1 percent endorsed either research or publication as a major pathway to promotion. These percentages make quite a contrast to the 93 percent of university arts and science deans who rated research a major factor. Student advising in the junior college also rated high as a criterion for salary and promotion.

In summary, faculty do not have major influence regarding the first two criteria for achieving universal higher education, i.e., the removal of geographical and financial barriers. Their major influence is directed toward the removal of barriers to learning or to offering courses and services which meet the needs of the student. In this sphere they appear willing— in principle—to devise new forms of learning experiences for the junior college student. But in practice, they find it difficult to depart radically from the "academically respectable" curriculums that constitute most of higher education. Their collective responses to questionnaire items convey the impression that they would hope to meet the needs of their students with a rather traditional academic approach to learning.

III. PERFORMANCE OF THE COMMUNITY COLLEGES

Despite some problems, it appears that community colleges have been reasonably successful in establishing a distinctive identity. They do appear to have a mission which is in accord with the general criteria we have established for evaluating the role of the community colleges in providing postsecondary education for all. But, how close do they come to achieving their mission? This section will discuss the progress of the community colleges in this regard.

Progress in Removing Geographical Barriers

Over the Nation as a whole, the rate at which community colleges have been brought geographically close to the people is phenomenal. From a rate of one new college established per week throughout most of the 1960's, the pace quickened in 1967 to 72 new institutions, and at the present time there are almost 1,000 2-year colleges in the United States. Of these, about 750 are public community colleges. While it appears the Nation as a whole is making rapid strides toward removing geographical barriers, there are enormous variations by region. In the fall of 1968, for example, California had 87 public 2-year institutions compared with two or less in 10 of the States. Generally speaking, States that have developed strong master plans for 2-year colleges are close to realizing the goal of establishing junior colleges within commuting distance of the great majority of the population.

Within States, there are great variations in the distribution of public community colleges. There has been some tendency to establish 2-year colleges in suburban areas where space is available, and it would appear that more attention needs to

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[16] C. Lee, "Open-door Classrooms for Open-door Colleges." *Junior College Journal,* February 1967.

TABLE 1—*Estimated Percent of the Civilian Noninstitutional Population Enrolled in School for Ages 18-24—Full Time, Part Time, Day or Night. October 1966*

Age	*White*	*Nonwhite*	*Negro*	*Total*
18-19	48.2	40.0	37.7	47.2
20-21	32.2	14.2	11.6	29.9
22-24	14.0	7.5	6.1	13.2

Source: U.S. Department of Commerce, Bureau of the Census, *Current Population Reports,* Series P-20, No. 167.

be given to the educational problems of the inner city and to the continued rural-urban population shift.

While the problems of geographical distribution cannot be solved overnight, progress is being made. In some metropolitan areas multi-institution junior college districts have been formed. In 1964 there were only 10 multi-junior college districts; in 1967 there were 31; and in 1968 there were 40.

Progress in Removing Financial Barriers

There is considerable research evidence to show that the 2-year colleges are expanding the educational opportunities available to youths from low socioeconomic strata. In a study sponsored by the College Board and conducted by the Center for Research and Development in Higher Education at the University of California, Berkeley, it was found that almost half (46 percent) of the junior college students stated that the low cost was a major consideration in their choice of college.[17] Almost two-thirds of the so-called "full-time" community college students are working while attending college, and nearly one-fifth of them expect these wages to be a major source of their financial support during the freshman year. As a point of comparison, only one in 20 senior-college freshmen expects to be dependent upon a job during the freshman year.

In dramatic confirmation of the role of the junior college in providing for youth from low socioeconomic background, Medsker and Trent compared college attendance rates in 16 cities that were similar in demographic and industrial features but different in the type of public colleges available in the community.[18] Five of the communities had public junior colleges, four had freshman-sophomore extension centers, four had relatively unselective State colleges, and two had no public colleges at all. One was a community that offered multiple college opportunities.

Communities with junior colleges had the highest proportion of students going on to college, while those with State colleges were next in order. The extension centers made the least impact on the local community: communities in which they existed showed about the same rate of college attendance as did the communities with no college at all. Fifty-three percent of the high school seniors from communities with a junior college entered college. For communities with other or no facilities for higher education the figures were: State colleges, 47 percent; multiple colleges, 44 percent; extension centers, 34 percent; and no college, 33 percent.

The type of college present in the community made the least difference to bright students (upper 40 percent of their high school classes in ability) of high socioeconomic status. They went to college anyway. Averaging across all 16 communities, 82 percent of this group entered college. The impact of local opportunities for college was most vivid for students of high academic ability from lower socioeconomic levels. While 80 percent of the bright youth from high socioeconomic backgrounds went to college even if there were none in the local community, only 22 percent of the lower socioeconomic group of the *same level of ability* entered college when there were no local colleges. The presence of a local junior college more than doubled the opportunity for bright students whose fathers were employed at the lower occupational levels. In junior college communities, 53 percent of the bright students from lower socioeconomic levels entered college; but in communities with no public college facilities, only 22 percent of the group entered college. Between these extremes are multiple-college communities serving 49 percent of bright, low-socioeconomic youth; State-college towns serving 41 percent; and extension-center localities serving 35 percent.

Research thus indicates that accessibility of college has a strong impact upon students from lower socioeconomic levels. Junior colleges, it appears, are demonstrating considerable effectiveness in the democratization of higher education.

Progress in Removing Barriers Based Upon Race and Sex

Throughout the history of the Nation opportunity for higher education has been limited for those of the "wrong" color or sex. To attain a national goal of postsecondary education for all, progress must be made in the elimination of discrimination based upon race or sex.

Progress in Removing Barriers Based Upon Race

Table 1 shows the distance yet to go in removing the barriers of race from the opportunity for postsecondary education.

Public community colleges are expected to play a major role in bringing educational opportunities to minority youth. How well are they doing? Table 2 shows the proportion of minority enrollments in public institutions.

If about half of those who gave "other" as a response to the question of race are assumed to be blacks who objected to the term "Negro," then these data correspond very well with another recent nationwide sample that found 84 percent

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[17] *SCOPE* (School to College: Opportunities for Postsecondary Education). A descriptive report from the Center for Research and Development in Higher Education, University of California, Berkeley. Four-State Profile, Grade 12, 1966. New York: College Entrance Examination Board, December 1966.

[18] L. Medsker and J. Trent, *The Influence of Different Types of Public Higher Institutions on College Attendance From Varying Socioeconomic and Ability Levels.* USOE Cooperative Research Project No. 438. Berkeley: Center for Research and Development in Higher Education, University of California, 1965a.

TABLE 2—*Enrollment in Public Colleges by Race*

Race	All Institutions	Public 2-year Colleges	Public 4-year Colleges	Public Univ.
Caucasian	87.3	83.6	84.9	91.6
Negro	5.8	4.7	9.8	3.3
Am. Indian	.7	1.4	.5	.5
Oriental	1.1	2.1	.7	.7
Other*	5.1	8.3	4.1	3.9

*There is some indication that some blacks checked "other" in objection to the term "Negro" (Bayer & Boruch, 1969).
Source: Creager *et al.*, 1968.

Caucasian, 8 percent Negro, and 3 percent Oriental in 63 community colleges.[19]

Although, across the Nation, public community colleges enrolled a slightly lower proportion of Caucasians, there are tremendous regional differences. The South, for example, has far and away the largest number of Negro students in college, but only 6 percent are enrolled in public community colleges; 55 percent are enrolled in public 4-year colleges. Although the Far Western States have only about one-tenth as many Negro college students as the South, 70 percent of them are enrolled in public community colleges—probably largely in the extensive community college system of California.[20]

In the fall of 1967, the U.S. Civil Rights Commission found that approximately 60 percent of the Negro student enrollment was in the Southern States, mostly in predominantly Negro colleges. Outside of the South, community colleges enrolled 43,000 of the 100,000 Negro college students. There is every reason to expect that the greatest increase in Negro college attendance will occur in the public community colleges and especially in those with urban locations.

Several studies have revealed that the educational aspirations of minority youth are especially high. A Bureau of the Census survey conducted in 1965 reported that 67 percent of the nonwhite high school seniors were considering college, compared with 60 percent of the white youth.[21] Bayer and Boruch reported that in their sample of college freshmen, 55 percent of the blacks said that they were planning to work for a master's or doctor's degree, compared with 42 percent of the nonblacks.[22] Although there is considerable evidence to show that low socioeconomic youth receive little encouragement from home to attend college, minority mothers are more likely than others to express the hope that their children will graduate from 4-year colleges.[23]

Minority students as well as white students continue to think of college as a 4-year program. Table 3 shows relatively low percentages of high school seniors wanting to settle for a 2-year college only. Froomkin notes, however, that twice as many nonwhites as whites said they were planning to enroll in 2-year colleges as the first step in attaining 4-year degrees.

TABLE 3—*College Plans of High School Seniors, in Percentages, 1965*

Senior plans	*Male*	*Female*	*White*	*Nonwhite*
No college	21	37	30	20
Don't know about college	11	10	10	13
College—"Yes, maybe"	28	22	24	30
2-year college only	9	8	9	8
4-year college	19	14	15	21
College—"Yes, definitely"	40	31	36	37
2-year college only	5	5	5	7
4-year college	35	26	31	30

Source: Unpublished tabulation by A. J. Jaffe and Walter Adams of a special survey conducted by the U.S. Bureau of the Census (cited in Froomkin, 1969).

Even at the very low ability levels, American youth dream of higher education as the pathway to success. Table 4 shows the challenge which rising expectations are presenting to those planning for the future of postsecondary education.

TABLE 4—*College Plans of 1965 High School Seniors by Verbal Ability and Race*

Level of Verbal Ability and Race	*Educational Aspiration*			
	No college	*Less than 4 years*	*4 years*	*4 years plus*
Very low				
Caucasian	61	24	11	4
Minority	37	32	21	10
Low to average				
Caucasian	43	23	25	9
Minority	28	25	27	19
Above average				
Caucasian	18	12	39	30
Minority	17	11	33	38

Source: Adapted from special tabulations of the Coleman 12th grade data, reported by Walter Adams, "Case and class, relative deprivation, and higher education," unpublished (in Froomkin, 1969, p. 23).

While it may be overly optimistic for nearly a third of the very low ability minority students of the class of 1965 to plan 4 years or more of college, it is apparent that the discrepancy between whites and nonwhites is especially high at the low ability levels. Undoubtedly in the minds of these students, education holds the hope for upward mobility.

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[19] Comparative Guidance and Placement Program (CGP), *Program Summary Statistics for 1968*. Prepared for the College Entrance Examination Board by Educational Testing Service. Princeton, New Jersey: 1969.

[20] J. S. Coleman, *Equality of Educational Opportunity*. Washington, D.C.: Government Printing Office, 1966.

[21] J. Froomkin, *Aspirations, Enrollments and Resources*. (Planning paper 69–1) Office of Planning and Evaluation, U.S. Office of Education. Washington, D.C.: Government Printing Office, May 1969.

[22] A. Bayer and R. Boruch, *The Black Student in American Colleges*. Washington, D.C.: American Council on Education, Research Reports, 4, 2, 1969.

[23] J. Froomkin, *op. cit.*

There has been considerable discussion recently regarding the low status of the vocational programs in community colleges. The implication has been that the racial minorities are not interested in vocational courses because of the lack of status. While attitudes change very rapidly in the present social turmoil, there is evidence that minority groups are more likely to be enrolled in vocational courses than are whites. Table 5 shows enrollments in the various curriculums of 63 public community colleges for more than 23,000 full-time students.

TABLE 5—*Enrollment in Public Community College Curriculums by Race in Percentages*

Race	*Total*	*College-parallel*	*Technical*	*Occupational*
ucasian	84	91	79	70
gro	8	5	7	14
iental	3	1	7	7
her	2	1	4	6

urce: Comparative Guidance and Placement Program, 1969.

The occupational programs of less than 2 years' duration have the largest proportion of black students. Undoubtedly, some are there because they did not meet the academic qualifications for admission to the transfer and technical curriculums, but Coleman found sharp differences between white and nonwhite 12th-graders in their stated desire to enroll in a vocational program if one were available.[24] In the South, 67 percent of the blacks and 46 percent of the whites expressed a desire to enroll in a vocational curriculum, while in the non-South the respective proportions were 53 percent for the blacks and 40 percent for the whites.

While much remains to be done, there is evidence that the public community colleges are making progress in removing racial barriers to postsecondary education. Their low cost, open-door, commuter practices, together with their broad curricular offerings, do appear to be making headway in providing for the educational needs of minority youth.

Progress in Removing Barriers Based Upon Sex

The sex barrier to postsecondary education has not received as much attention as the race barrier, but it must receive a close look if the goal of postsecondary education for all is to be realized. In the fall of 1966, according to the U.S. Department of Labor, 59 percent of the male high school graduates 16 to 24 years of age were in college, compared with only 43 percent of the females.[25] These percentages correspond well with the Trent-Medsker finding that 57 percent of the male high school graduates attended college at some time during the years 1959–63, compared with 42 percent of the females.[26] Across the country, the ratio of females to males in higher education is two to three. The prestigious colleges and universities and the 2-year colleges have a higher proportion of males while the State colleges have a lower percentage.

As with racial barriers, the social factors involved in deterring females from seeking higher education are difficult to eliminate since they have their roots in the attitudes of society. Socioeconomic status and encouragement to children to attend college are important correlates of college attendance. As high school seniors, males are more likely than females to receive encouragement from parents to attend college; 47 percent of the males but 37 percent of the females reported that their fathers "definitely desired" college for them. The figures for mothers' encouragement were similar but slightly higher: 49 percent for males to 37 percent for females.[27] Table 6 shows the well-known effects of the father's education upon the child's college attendance. At every level, females are less likely to attend college than males, but the highest educational attainment of father shows the least differential between males and females.

TABLE 6—*College Attendance Rates for Men and Women 20-24 Years of Age by Father's Education, in Percentages*

Educational attainment of father	*College attendance rates* *Male*	*Female*
Not completed high school	23	14
High school graduate	65	52
Attended college	80	73

Source: Constructed from information contained in U. S. Bureau of Census, 1967, p. 144.

Self-confidence is also an important determinant of who goes to college, and despite the fact that females make better high school grades than males, 35 percent of high school senior males, but only 26 percent of the females felt that they "definitely had the ability" to do college work. Barriers for females are especially high for the lower half of the high school class in ability. The proportion of lower-half males going to college is 26 percent; for lower-half females it is 15 percent.[28]

Progress in Providing Educational Programs to Meet the Needs of All

The commitment of the public 2-year colleges to provide a variety of educational programs is reflected in the gradual change of name from "junior college" to "comprehensive community college."

In recent years, this change has been obvious among authors in the *Junior College Journal* and there is a self-conscious attempt to move away from the implication that the 2-year college is a "junior" version of the 4-year college. This section cannot hope to discuss fully the progress of the comprehensive community colleges in providing appropriate curriculums for

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[24] J. S. Coleman, *op. cit.*

[25] U.S. Department of Labor, Bureau of Labor Statistics, *Monthly Labor Review*, July, 1967.

[26] J. Trent and L. Medsker, *Beyond High School: A Study of 10,000 High School Graduates.* Berkeley: Center for Research and Development in Higher Education, University of California, 1967.

[27] *SCOPE, op. cit.*

[28] J. Creager, A. Astin, R. Boruch, and A. Bayer, *National Norms for Entering College Freshmen—Fall 1968.* Washington, D.C.: American Council on Education Research Reports, Vol. 3, No. 1, 1968.

0E 191

universal postsecondary education, but a brief analysis of four major curricular programs may be helpful: transfer programs, vocational and technical education, remedial education, and continuing education.

Providing Transfer Education

Historically, the junior colleges were founded to provide the first 2 years of college education. Preparation of students for transfer to 4-year colleges is still a major function of the 2-year colleges. Students and their parents are especially prone to view entrance to the junior college as the first step to a baccalaureate degree. While roughly 60 percent of the high school seniors in a census survey thought they either might or definitely would go to a 4-year college, only about 15 percent thought they would stop with a 2-year college education.[29] It is a well-known fact that the educational aspirations of young people far exceed their accomplishments. From two-thirds to three-fourths of the students state upon their entrance to junior college that they intend to transfer, but only about one-third actually do. To answer the question of how well the junior college provides for the needs of the potential college transfer, two factors must be considered: (1) What are the problems encountered in gaining admission to the 4-year college? (2) What are the academic problems encountered at the 4-year institution? Two well-designed research studies provide some answers to these questions.

In a study of the patterns of admission of transfer students to 146 4-year colleges representative of all 4-year accredited institutions in the United States, Willingham and Findikyan concluded that, on the whole, the transfer process from 2- to 4-year institutions is smooth.[30] The real success story is told by their finding that junior college transfer students are less likely to be rejected by the institutions to which they apply than are transfers from 4-year institutions. Junior college transfers have almost the same average college grades as those who apply for transfer from 4-year colleges and yet the rate of rejection for junior college transfers is 24 percent compared to 35 percent for the transfers from 4-year colleges.

Furthermore, the junior college student who transfers to a public 4-year institution is somewhat more likely to receive full credit for past college work than the student moving from 4-year institution to 4-year institution. Willingham and Findikyan found that college grades seemed to be the principal gatekeeper. When transfers from both 2- and 4-year institutions are combined, those with a C+ average or better show a 13 percent rejection rate. When the grade average drops to a C, the rejection rate climbs to 31 percent, and for transfers with grades of C– or lower, the chances for acceptance are very poor, with 75 percent being rejected. For public junior college students with averages of C or better who are applying for transfer to a public 4-year institution in the same State, the rejection rate is less than 10 percent. Junior college transfers now make up 43 percent of the total transfer population, and this ratio will undoubtedly climb as more State plans are implemented in which an important function of the 2-year colleges is to prepare students for transfer. Four-year institutions appear to be welcoming the transfers. Among students new to the institution, transfers have increased at approximately twice the rate of freshmen over the past 5 years. Administrative officers in senior institutions predict that by 1971 about one-third of their new students will be transfers. For the country as a whole, the transfer model seems to be working quite well, but there are some problems.

Students wishing to transfer to 4-year institutions in the Northeast will find a bottleneck. Whereas senior colleges in the West were rejecting 24 percent of the transfer applicants, the receiving institutions in the Northeast were rejecting 52 percent, and only 12 percent of their new students were transfers. The problem apparently is space. The percentages of qualified applicants rejected because of space range from 15 percent in the Northeast to zero percent in the West. Whereas two-thirds of the transfers in the West were from 2-year institutions, only 17 percent of the transfers to Northeastern institutions originated in junior colleges. Public junior colleges are much better developed in the West than in the Northeast, and the problem could become acute with the growth of 2-year institutions in the Northeast.

Another problem with potentially very serious consequences has to do with financial aid. The low cost of education in the junior college is of considerable importance to the student, and financing two more years of college, possibly away from home and job, cannot be taken lightly. Yet, fewer than one college in five in the Willingham and Findikyan study had set aside aid specifically for transfers. The result was that 33 percent of the freshmen received aid but only 14 percent of the transfers did. We do not know how many able junior college graduates are deterred from continuing their education because of lack of funds. However, Knoell and Medsker found that financial problems ranked first among the reasons for withdrawal given by junior college students who withdrew from a 4-year college, and 40 percent checked "lack of money" as one reason for dropping out.[31]

Of the potential problems associated with the model in which the first 2 years of college education are provided by the junior college, the restricted funds available for transfers appears to be the most serious. Although progress has been made in articulation between 2- and 4-year institutions in the years between the Knoell-Medsker report on transfer students and the Willingham-Findikyan study, little progress seems to have been made on financial problems faced by students. Five years ago, Knoell and Medsker observed: "Under present financial arrangements and programs, many junior college students are developing false expectations about transfer and are having to drop out after finding that they cannot solve their financial problems." [32]

One other problem arises, however, which is serious for a few students. About 8 percent of the junior college students applying to 4-year institutions are from 2-year college career programs. The Willingham and Findikyan study does not report the grades for this group, but the rejection rate is very high—62 percent. Relative numbers are small, but the absolute figures are considerable. It is estimated that in the fall of 1966, 14,600 students from the occupational program applied for transfer and approximately 9,000 were rejected. Further study is needed to shed light on the reasons for transfer on the part of the students and the reasons for rejection on the part of the senior institutions.

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[29] J. Froomkin, *op. cit.*

[30] W. Willingham and N. Findikyan, *Patterns of Admission for Transfer Students.* New York: College Entrance Examination Board, 1969. This section on admissions patterns of transfer students is drawn from the Willingham and Findikyan report.

[31] D. M. Knoell and L. Medsker, *From Junior to Senior College: A National Study of the Transfer Student.* Washington, D.C.: American Council on Education (for Joint Committee on Junior and Senior Colleges), 1965.

[32] *Ibid.*

While problems do exist in the admission of junior college transfers, the model is undeniably successful to date as far as the flow of students is concerned. Having gained admission, what problems does the junior college transfer experience, and how well has his junior college education prepared him for his continuing education?

Although somewhat dated now, the Knoell-Medsker research is still the best description of what happens to junior college transfers in senior colleges. Their study involved the comparative college performance of some 7,000 junior college transfer students with 3,350 native students. They found that 62 percent of the junior college transfers graduated within 3 years after transfer, and they estimated that at least 75 percent would receive their degrees eventually.

Some comparison with the retention rates for native students starting their third year would give a better indication of how effective the junior colleges are in providing college parallel training. Knoell and Medsker found vast differences in the success of transfer students, depending on the background of the student and on his choice of senior institution. Typically, junior college transfers tended to experience a slight drop in grades, especially in their first semester after transfer, but they showed steady improvement thereafter. In the Knoell-Medsker sample, students whose junior college average was below a C+ were not very likely to earn satisfactory grades in some of the major State universities. Since the State universities have recently shown the greatest increase in the number of transfers from 2-year colleges, some followup research on their success is indicated. Knoell and Medsker concluded that "on the whole, the junior college transfers were very well satisfied with their experience in the junior college and encountered few serious problems in the 4-year institutions.[33]

Providing Vocational and Technical Education

Evaluation of how well the community colleges are doing in providing for the needs of students through vocational and technical education is much more difficult than the evaluation of their transfer function. While it is easy to correlate grades made in the 2-year college with grades made after transfer, it is not very easy to make an assessment of how well junior college vocational curriculums have prepared students for jobs. Much more research is needed in this area.

The College Entrance Examination Board is sponsoring a program carried out by the Educational Testing Service which is designed to provide the 2-year colleges with a guidance and placement program geared to their special needs. One of the outputs of this program is some descriptive research about the characteristics of students enrolled in college parallel, technical, and vocational curriculums. The prerequisite to students is knowing what those needs are. A brief summary evaluating how well educational programs serve the needs of of the differences between the three curricular groups will be presented here, but full reports will be forthcoming from research now underway.

One of the problems in describing the vocational or technical student in community colleges has been the difficulty of classification by curriculums. Gradually we seem to be approaching some agreement nationally on a rough three-way classification scheme consisting of: (1) college parallel; (2) 2-year technical programs, including science-related programs such as engineering and industrial technologies, health technologies, and nonscience curriculums at the technical level such as business and commercial arts; and (3) vocational programs of less than 2 years' duration such as practical nursing, auto mechanics, secretarial training, etc.

These Comparative Guidance and Placement Program data are based upon information collected in 1968 from some 23,000 full-time students enrolled in 63 public community colleges throughout the country. The sample is thought to be reasonably representative of full-time community college students. But because part-time students are not represented special care needs to be taken in interpreting data from occupational programs, especially since large numbers in this group may be part-time students.

Classification into curricular groupings was made by institutional representatives in cooperation with the research investigators. Numbers and percentages in the various curriculums are shown in table 7.

TABLE 7—*Numbers and Percentages of Students in Curricular Groupings*

Curriculums	*N*	*Percent*
College Parallel	11,399	50
Technical	6,226	27
Vocational	800	4
General Curriculums	1,152	5
Undesignated	3,184	14
	22,774	100

Source: Comparative Guidance and Placement Program, 1969.

It is of some interest to observe that "college parallel" is not necessarily synonymous with "transfer" to the students. Although half are registered in college parallel curriculums, over two-thirds of the students across all curriculums say that they plan to transfer to 4-year institutions. Eighty-five percent of the college parallel group, 43 percent of those in the technical curriculums, and 21 percent of those in occupational courses say in their first semester of college that they plan to transfer to 4-year colleges.

On the 10 measures of ability in the CGP test battery, students in the college parallel curriculums tended to make the highest average scores, with those in the nondegree vocational courses scoring lowest and the technical students falling in between. Nurses in the degree programs, however, scored at or above the average of the women in the college parallel curriculums. There appears to be general agreement in research studies that men enrolled in occupational programs score sig-

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[33] *Ibid.*, p. 19.

TABLE 8—*Selected Characteristics of Students Enrolled in Three Curriculums in 63 Comprehensive Community Colleges, in Percentages**

Characteristics	*College Parallel*	*Technical*	*Vocational*
Sex			
Male	60	61	58
Female	40	39	42
Father's occupation			
Unskilled or semiskilled	18	26	35
White Collar	46	35	25
Parental income			
Less than $6,000	14	14	24
More than $10,000	36	28	21
Father's formal education			
Less than high school graduation	27	34	50
Some college or more	31	20	14
Race			
Caucasian	91	79	70
Negro	5	7	14
Oriental	1	7	7
Other	1	4	6
Main reason for attending this institution			
Inexpensive	25	18	13
Close to home	28	22	19
Strength in major	8	24	32
Educational aspirations			
One-year program	2	3	29
Two-year special training	6	39	32
Two-year degree	10	12	6
Bachelor's degree	38	19	8
M.A. or higher	17	6	3
Work wanted after finish education			
Plans vague	28	20	11
Have good idea	47	48	48
Know exactly	19	23	30
Object of education			
Mostly or entirely general education	60	34	21
Mostly or entirely job training	31	51	64
High school courses waste of time			
Disagree	51	47	44
Agree	42	44	45

*Only selected alternatives are given and categories have been combined to present a succinct summary of data.
Source: Comparative Guidance and Placement Program, 1969.

nificantly lower on tests of academic ability than men in the college parallel program. For women, there is not much difference between the average test scores of the various curricular groups.[34]

A better understanding of the background and aspirations of students in the major curricular options of the community college may be gained from a study of table 8 which presents only highlights of the data.

There is a very obvious socioeconomic hierarchy in the community college programs. As expected, students in the college parallel program come from homes in which the father is better educated, has a higher-level job, and makes more money than those in the technical and occupational curriculums. It is important to remember, however, that students in the community college transfer programs are only relatively well off. As the Creager study noted, half of the students in 4-year institutions come from homes in which the father makes more than $10,000 annually and 44 percent have fathers who have some college education.[35]

It is not surprising to find that the same hierarchy that operates in family income, education, and job status operates in racial mix. Minority groups are not well represented in the college parallel program, but the percentage of Negroes in the total sample of the community college population is only 8 percent, and for Orientals it is 3 percent. Thus, the technical and occupational curriculums draw a somewhat higher proportion of minority students.

The job orientation of students in the occupational courses shows quite clearly. On the whole, they appear to have decided what they want to do and to have selected the courses and colleges that will move them in that direction. There is cause for concern, however, about the minority in this group who are taking rather specific job training while saying that their plans are vague or that they aspire to bachelor's or master's degrees. While 55 percent of the students in the college parallel curriculums aspire to bachelor's degrees or higher, some perspective is gained when this proportion is compared with the 80 to 90 percent of 4-year college freshmen who hope to graduate from college.

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[34] K. P. Cross, *Occupationally Oriented Students in Community Colleges.* Berkeley, California: Educational Testing Service, December 1969. Mimeographed.

[35] J. Creager, *et al., op. cit.*

The high school courses did not receive a very good rating among the students from 63 community colleges all across the country. When almost half of them agree, strongly or mildly, that their high school courses were a waste of time, we must be doing something wrong. There is a tendency for those who are pursuing the more traditional academic route to be somewhat better satisfied than those who are preparing for a job. The contrast between community college students and 4-year college students in their attitude toward their past education has been demonstrated in past research, where it was found that 73 percent of the 4-year college freshmen would change very little about their high school work whereas only 49 percent of the community college students were that well satisfied.[36]

A frequently cited research finding is the interest of community college students in practical and tangible goals. Occupationally-oriented students are especially prone to state that the object of education is job preparation. Since traditional high school courses are not directed toward job training, it is not surprising that 4-year college students find their high school courses more appropriate to their interests than do occupationally-oriented students.

Providing Continuing Education for Adults

The educational attainment of the general population has risen sharply until, at the present time roughly one adult in five has had some education beyond high school.

It has been estimated that there are about 17 million adults enrolled in courses, and many of these are attending community colleges. While most adults are part-time students, full-time students over 21 make up 7 percent of the junior college population but less than 2 percent of the enrollment of 4-year institutions. Another way of stating the importance of adult education in the community colleges is to observe that part-time students constitute 46 percent of the total student enrollment in community colleges and 35 percent of the total 4-year college enrollment.[37]

The educational needs of adults are much more varied than those of the "college age" population. The community colleges have discovered that all ages are "college age" and an enormous variety of courses are offered—from the short-course to the AA degree, from business investments to cultural appreciation, part-time or full-time, day or night. Educational opportunities of a less formal nature than the classroom offers are also recognized by the community colleges as a legitimate function. Medsker has found that almost 60 percent of the junior college faculty felt that the sponsorship of community educational and cultural events was essential for the college. Only 3 percent thought it inappropriate. The faculty endorsement of courses for adults in humanities, social sciences, and natural sciences was very hearty; 61 percent thought such courses were essential. The only programs for the community college on which there was greater agreement on Medsker's questionnaire were the two mainstays of the community college curriculum—the 2-year transfer and technical programs.

There is an obvious commitment on the part of the community colleges to provide educational experiences appropriate for the needs of adults. State plans, the leadership in the junior college movement, and faculty and staff appear to be making provisions for continuing education, and adults in the community appear to be taking advantage of the programs.

Providing Remedial Education

Table 9 illustrates what happens as the Nation moves toward universal postsecondary education.

TABLE 9—*Ability Levels of Students Entering College in 1953, 1960, and 1968, in Percentages*

Ability Levels	*Wolfle*[1] *1953*	*TALENT*[2] *1960*	*SCOPE*[3] *1968*
Lowest quarter	20	19	17
Third quarter	32	32	36
Second quarter	38	54	60
Top quarter	48	80	84

Sources: 1. Wolfle, 1954.
2. Goldberg & Dailey, 1963.
3. SCOPE, 1969.

The three samples are somewhat different, but they are all large, nationally diverse samples, and in a general way they illustrate the trend. As colleges reach the saturation point for high ability students, the increase will, of necessity, come from the second and third quartiles. In 1968 the SCOPE data showed that the ability distribution in the 2-year colleges, from top to bottom quartiles, was 17 percent, 32 percent, 31 percent, and 20 percent. This means that 51 percent of the junior college students rank among the lower half of high school graduates. There are somewhat fewer very bright and very slow students and more of the middle group than in the average high school where the distribution is, by definition, 25 percent in each quartile. Junior college student bodies are rapidly becoming representative of the population at large. This is a new problem for higher education, but it is the essence of universal postsecondary education. Roueche has synthesized much of the research on remedial education, and the following paragraphs draw largely from his monograph.[38]

Low achieving students are usually identified by high school grades or by tests. If tests are used, the cut-off point is most frequently between the 11th and 15th percentiles. If grades are used, the usual practice is to admit those with a "C" average or better to regular college credit courses, and this leaves about half of the group classified as low achievers. In a California study, almost 70 percent of those entering public junior colleges in the State failed the qualifying examination for the transfer English course,[39] and 75 percent of the students were taking mathematics courses offered in the high school.[40] The need for programs for those with educational deficiencies can be amply demonstrated. Yet Medsker found that 21 of the 57 community colleges in his survey did not offer remedial programs and half of the faculty sample felt that such programs were not essential.

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[36] K. P. Cross, *The Junior College Student. . . .*, *op. cit.*

[37] U.S. Office of Education, *Opening Fall Enrollment in Higher Education.* Washington, D.C.: Government Printing Office, 1967.

[38] J. Roueche, *Salvage, Redirection, or Custody?* ERIC and AAJC Monograph Series. Washington, D.C.: American Association of Junior Colleges, 1968.

Roueche, after looking at the rather scanty research on remedial programs in the community college, asks: "Can student deficiencies be remedied? Can a junior college remedial course rightfully be expected to accomplish in one or two semesters what the public schools have failed to accomplish in 12 years?"[41]

What little research is available on the question is discouraging. Los Angeles City College found that fewer than five in 100 remedial students ever qualified for the transfer or the technical programs at the college.[42] Although Forest Park Community College found that students in its remedial program showed significant increases on measures of basic academic skills, the increases were not sufficient to warrant the transfer of the average student to any technical or transfer program offered by the college.[43] Doueche, in his study, concluded his survey of research on remedial programs by writing:

> There is a paucity of research on the efficacy of remedial programs in the junior college. Indeed, with few exceptions, community colleges neither describe nor evaluate their endeavors in this critical area. Available research will not support the contention that junior colleges offer programs that, in fact, remedy student deficiencies. Programs are certainly offered, but the entire issue of remedying deficiencies has not been sufficiently researched to date. Those few junior colleges that have evaluated the success of their remedial programs found that their programs were not remedying student deficiencies to a point where remedial students could enter regular college credit courses upon completion of the remedial course. In these institutions, student achievement and student persistence were not nearly sufficient to warrant continuation of a program designed to remedy deficiencies. Instead the emphasis and focus were shifted to general education with another prime consideration being job placement following the program.[44]

This decision on the part of some colleges to dispense with remedial programs that attempt to correct educational deficiencies has profound implications for universal postsecondary education. The confusion over the objectives of remedial programs in the community college is great, and three major alternatives have been proposed:

1. To take a fairly "hard" approach in defining more precisely the objectives of courses for the educationally deficient as "terminal" education designed to prepare the student for "life in a contemporary society."[45]

2. To take a "soft" approach in which the situation is not clearly defined but the student is "cooled out" by being permitted to face the reality of discovering that his aspirations are illusory and that he must modify his educational choices.[46]

3. To take an optimistic approach and continue the search for new methods and programs to handle the special learning problems of the educationally deficient.

In support of third alternative, Medsker writes:

> Some institutions have redirected programs to emphasize general education. This redirection would seem to be a kind of goal evasion. Having no clear benchmarks for evaluating program success, some colleges viewed lack of student persistence as a mark of program failure. Then, instead of reappraising goals, criteria for admission, program content, and methods of evaluation, they concluded instead to give them some general education during the year or less that they stay. It may be that this course of action salves the conscience of faculty and administrators, but it does not accomplish the primary task of providing skills to make it possible for an individual to realize an educational goal.

Standing as a barrier to the accomplishment of a national goal of universal postsecondary education is the lack of knowledge about the increasing numbers of students now entering colleges without the minimum qualifications for the courses presented. Research in this area is totally inadequate to answer one of the most important questions that can be raised about education beyond high school.

The community colleges can appropriately be faulted for their failure to allocate more of their resources to developmental programs for the educationally deficient. Some have been too eager to enhance the "prestige" of the junior colleges by focusing attention on the number of able students or on the number who transfer while ignoring the existence of large numbers of students for whom their approach is quite inappropriate. It would appear that considerable change must take place in faculty attitudes and values before developmental education will have any real meaning in the community colleges.

IV. SUMMARY

In general, there is cause for optimism regarding the capacity and spirit of the 2-year colleges in providing postsecondary education for all. The movement, from State planners to students, seems to have accepted the challenge.

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[39] R. M. Bossone, *Remedial English Instruction in California Public Junior Colleges: An Analysis and Evaluation of Current Practices.* Sacramento, California: California State Department of Education, September 1966. Mimeographed.

[40] California State Department of Education, Bureau of Junior College Education, *Student Majors by Curriculum Fields and Other Related Data in California Junior Colleges.* Sacramento: California State Department of Education, 1964.

[41] J. Roueche, *op. cit.*

[42] G. G. Gooder, *The Developmental Studies Workshop.* Los Angeles: Los Angeles City Junior College District, 1967. Mimeographed.

[43] A. Thelen, *A Study of Academic Characteristics of General Curriculum Students After One Semester, One Year, in the General Curriculum Program.* St. Louis: Forest Park Community College, September 12, 1966. Mimeographed.

[44] J. Roueche, *op. cit.*, p. 47.

[45] *Ibid.*

[46] B. R. Clark, "The 'Cooling Out' Function in Higher Education." *American Journal of Sociology,* 66, pp. 569–576, May 1960.

1. The greatest problem lies in providing the programs of learning that will give the phrase "universal postsecondary education" more meaning than a simple 1 or 2 more years in school and off the streets and the labor market. The problem is especially severe for the lower half in ability, in educational achievement, in financial resources, in intellectual and cultural interests, etc. It is this group that constitutes the student body which is new to higher education, and the junior colleges cannot be held completely responsible for the lack of adequate programs to deal with the new needs in higher education which have arrived almost suddenly.

Students are already telling us on questionnaires, through demonstrations, and by an enormously high dropout rate that postsecondary education is not meeting their needs. Money spent in building facilities, in removing financial and geographical barriers, and in recruiting those who have not sought further education is at best a partial solution. It results in getting them to classes but it does not assure productive education.

By and large, success in school as measured by grades is indicative of success in higher levels of schooling. But except for a few academic endeavors, grades do not appear to bear much relationship to any other kind of life achievement—personal, social, or occupational. There is little evidence that "vocational preparation" prepares people for vocations. Until we can break out of the purely academic mold, it seems unlikely that vocational curriculums will achieve a positive identification; rather they will continue to be "nonacademic," and the negative connotation is likely to perpetuate the role of second best. When we can identify the positive attributes of people and curriculums that lead to successful job performance and human development, then we will have developed meaningful education for a diverse population.

Good research and development is a number one need if the Nation is to realize a goal of meaningful education beyond the high school. There is a need to better understand the students and their past cultural and educational experiences. There is a need to devise ways of measuring their strengths as well as their weaknesses. There is a need to experiment with new forms of education and to evaluate the results. And finally, there is a desperate need to devise new criteria for assessing the effectiveness of education.

2. There is no question that the barriers to postsecondary education are coming down. Geographical barriers still exist regionally, however. Some States and some cities are tragically slow in offering postsecondary opportunities to residents. Some regions have special problems.

3. Progress is being made in easing financial barriers. A major problem exists in the lack of financial aid available for community college transfers to 4-year institutions. And, of course, low-cost commuter colleges do not completely solve the financial problems for poverty families.

4. It would be unrealistic to maintain that discrimination has been erased as a factor limiting access to higher education. The open door of the community colleges has lowered the barriers based upon "qualifications" that confronted minority groups, and the low cost has lowered the barriers based upon financial ability. In truth, however, the primary obstacles may be motivational and related to self-concepts and lack of encouragement from parents and society. The motivations of racial minorities are receiving a great deal of belated attention now, but the motivation of women to seek higher education needs to be given much greater study if all people are to have equal access to educational opportunity.

5. The greatest problem faced by the community colleges is the task of preparing a new kind of education for a new kind of student. The concept of the junior college as a watered-down version of the senior college is totally inappropriate. It appears that reform might well begin with the education of future faculty members for the 2-year colleges.

It would appear generally, that the community colleges have made a major contribution in meeting the Nation's need for postsecondary education for all. There is, however, a difficult road ahead, and it will require even greater amounts of money, knowledge, and dedication to accomplish the mission.

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Forecast of the Supply and Demand for Faculty in Higher Education to 1975-76

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I. INTRODUCTION

Table 1 presents the major results of this study.

Full-time equivalent (FTE) degree credit enrollment from 1966 to 1975 is expected to increase approximately 70 percent.

The faculty/student ratio is assumed to decline in an annual decrement that is twice that of the recent past. This results in an increase in FTE students per FTE faculty member of approximately 17 percent, or from 13.5 FTE students per FTE faculty member in 1966 to 15.8 in 1975.

Even with the assumed decline in the faculty/student ratio, the product of the ratio and the projected FTE enrollment lead to a 45 percent increase in FTE staff from 1966 to 1975. The FTE staff is converted to full-time senior instructional staff by applying the proportions of full-time, part-time and junior staff that existed in 1966, the latest available information. (This step is shown in table 8.)

We have projected nine demand schedules for doctorates. These are based upon three assumptions about the percentage of doctorates on the full-time instructional staff and three assumptions about replacement rates.

The percentage of doctorates on full-time instructional staffs declined from 48.9 percent in fall 1963 to 44.1 percent in fall 1966. This 44.1 percent may be assumed, then, to continue as a constant. One may also assume improvements to 50 percent and to 60 percent of doctorates on the full-time instructional staff by 1975, as two other alternatives.

The first assumption about replacement rates is that of Bolt, Koltun, and Levine for scientists and engineers: 1.7 percent annually.[1] The second assumption was revealed by Rogers' study: 2.568 percent.[2] The third assumption is the 6 percent rate used by the U.S. Office of Education in its annual projections.[3]

Combining the three assumptions about doctoral ratios for full-time staff with the three assumptions about rates of doctoral replacement results in nine demand projections, three of which are presented in table 1.

Evidence from the National Academy of Sciences Doctorate Record File suggests that approximately 50 percent of new doctorates enter college and university teaching. In assessing the adequacy of supply to meet the demand, one-half of the new doctorates are assigned to full-time teaching. The remainder of the demand, if it is to be filled, must come from other educational systems overseas, or from nonacademic employment. Table 1 shows the magnitude of demand for full-time doctorate holders in teaching under three of the nine assumptions. The low and medium projections probably can be achieved. The high projection, however, results in a shortage of doctorates. The cumulative demand and supply are shown later in figures 2, 3, and 4.

If the low or medium replacement rates prevail, the percentage of FTE senior staff holding doctorates will probably increase to 60 percent by 1975. If the replacement rate is near 6 percent, however, this improvement in the quality of staff is not likely to be realized.

II. SOURCES OF TEACHER SUPPLY

The supply of teachers originates in educational institutions. An increase in enrollment leads eventually to an increase in the training of teachers, according to a study by Porter, and hence to an increase in the supply.[4] On the other hand, an increase in enrollment also leads to an increase in demand for college teachers. The increase in demand may not be immediately satisfied by the supply. Only after the period of time required to train new teachers will the supply eventually meet demand. Temporary shortages of teachers, then, may be expected when enrollment is increasing rapidly.

During periods of shortage the demand for teachers may be satisfied (a) by drawing upon the teacher supply from a foreign educational system; (b) by converting eligible nonteachers into teachers, for example, by hiring someone to teach who is employed in industry or government; or (c) by

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[1] Richard H. Bolt, Walter L. Koltun and Oscar H. Levine, "Doctoral Feed-Back into Higher Education," *Science*, Vol. 148, No. 3672, May 14, 1965, pp. 918–928.

[2] James F. Rogers, *Staffing American Colleges and Universities.* Washington, D.C.: U.S. Office of Education, 1967.

[3] U.S. Office of Education, *Projections of Educational Statistics to 1977–78.* (1968 Edition) Washington, D.C.: U.S. Office of Education, 1969.

[4] Richard C. Porter, "A Growth Model Forecast of Faculty Size and Salaries in United States Higher Education," *The Review of Economics and Statistics*, Vol. 47, May 1965, pp. 191–197.

TABLE 1—*Major Projections, Assumptions, and Results*

					New Doctorate Teachers Required in Full-time Senior Faculty in Following Year, Under Low, Medium & High Demand Condition		
Academic Year	FTE Enroll-ment (000)	F/S Ratio Assumed	Required FTE Instruc-tional Staff	Doctorate Production	Low 44.1% Doc-torates 1.7% Replacement (000)	Medium Increase to 50% Doctorate in 1975 and 2.568% Replacement (000)	High Increase to 60% Doctorate in 1975 and 6% Replacement (000)
1966-67	4,781.1	.07402	353.9	20.6	8.8	11.8	19.6*
1967-68	5,155.4	.07236	373.0	23.1	13.2	16.5*	25.4*
1968-69	5,670.9	.07125	404.0	24.3	6.6	10.1	19.9*
1969-70	5,944.6	.07013	416.9	27.6	8.6	12.6	22.7*
1970-71	6,254.8	.06120	432.8	29.5	8.3	11.2	22.3*
1971-72	6,614.6	.06791	449.2	32.3	8.9	14.9	34.0*
1972-73	6,991.4	.06679	467.0	36.4	11.4	16.6	30.5*
1973-74	7,375.5	.06667	491.7	39.9	5.9	10.7	24.4
1974-75	7,749.1	.06455	500.2	43.1	8.1	13.8	21.4
1975-76	8,117.8	.06343	514.9	45.3	—	—	—

*Indicates that demand equals or exceeds .5 doctorate production plus 3,500, the latter being a minimum estimate of doctorates transferring from non-academic employment to teaching in colleges and universities.

employing someone less qualified to teach. If none of these alternatives is available to the administrator, he may (d) increase the workload of the available staff. In the past, the demand for teachers in higher education has, undoubtedly, been filled by each of these four means.

When none of these means fills the demand, the educational administrator meets the resulting crisis by restricting course offerings or limiting the number of classes in a particular course. At this point the educational process may be severely handicapped. To avoid this result, educational planners attempt to anticipate future demand for teachers and to provide for an adequate increase in the supply. This process will be examined in detail.

The alternatives of hiring those with less satisfactory credentials and of increasing the workload are undesirable because they tend to erode the quality of instruction.

During periods of shortage, one might expect a higher rate of transfer of instructors from foreign educational systems; greater transfer from nonacademic to academic employment; and, an erosion in the qualifications of instructional staff, as might be evidenced by the percentage of staff holding doctorates. There might also be an increase in the student/teacher ratio and an increase in the employment of part-time instructional staff. Some of these part-time instructors may be qualified retirees and some of them may be graduate students of apprentice status.

During periods when enrollment is declining, such as from 1940 to 1944 and from 1949 to 1953, one might expect improvement in the qualifications of instructional staff, a decrease in the student/teacher ratio, a decrease in the employment of part-time instructors, and other conditions which improve the quality of the teaching staffs.

Since the status of teachers and teaching differs markedly, depending upon whether enrollment and the academic establishment are expanding or contracting, one must be guided, in the selection of statistical indexes, by the state of the profession at the time. Since 1954, higher education has been expanding. Trend characteristics, particularly since 1960, are probably reliable indicators of expansion for the immediate future. This would not be true if we were forecasting for a period of expected decline of enrollment.

III. A MODEL OF DOCTORAL SUPPLY IN HIGHER EDUCATION

Figure 1 presents a model of the movement of doctorates between different employment categories from one year to the next. Only the transitions affecting full-time teachers are included. Transitions between two educational institutions, and movement from research and administration into teaching are not included in the model. Part-time doctorates are employed in higher education in significant numbers. They are included as faculty, as will be shown later.

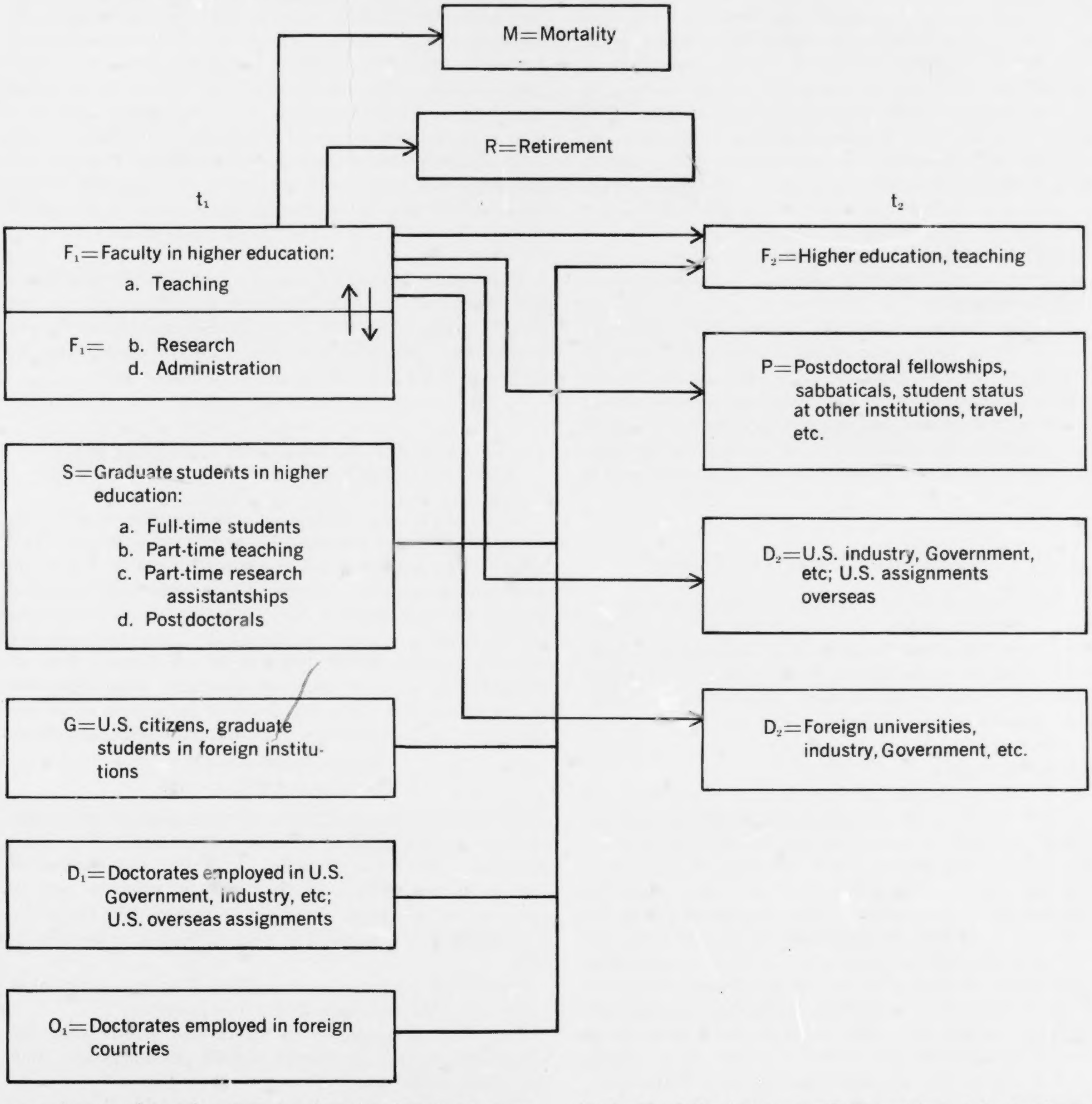
Elements in the model may be defined as follows:

F = full-time and part-time doctorates employed in educational institutions offering degree credit courses leading to recognized degrees requiring 2 or more years beyond high school. Such holders of the doctorate must be engaged in teaching, research, administration, or any combination of these activities. Both on-campus and branch-campus courses are included, if the courses are accepted for degrees. Adult education and other noncredit courses are excluded. Postsecondary educational agencies offering nondegree credit courses are excluded as well as correspondence extension courses.

S = graduate students in higher education working toward a higher degree. These may be (a) full-time graduate students engaged in course work or research as part of their degree program; (b) part-time students and part-time teachers or teaching assistants; (c) part-time graduate students and part-time research assistants participating in research projects of the educational institution or of another sector; (d) postdoctoral students, engaged in research or other learning activities, but not contributing to the teaching or research function on a level equal to or above the academic rank of instructor.

D = doctorates employed in Federal, State, and local govern-

Figure 1. Model of the Supply of Doctorates to Higher Education. The Transition from Time_1 to Time_2 is Pictured as the Movement of Doctorates From One Status to Another.


M=Mortality
R=Retirement
t_1
t_2
F_1=Faculty in higher education:
a. Teaching
F_1= b. Research
d. Administration
S=Graduate students in higher education:
a. Full-time students
b. Part-time teaching
c. Part-time research assistantships
d. Postdoctorals
G=U.S. citizens, graduate students in foreign institutions
D_1=Doctorates employed in U.S. Government, industry, etc; U.S. overseas assignments
O_1=Doctorates employed in foreign countries
F_2=Higher education, teaching
P=Postdoctoral fellowships, sabbaticals, student status at other institutions, travel, etc.
D_2=U.S. industry, Government, etc; U.S. assignments overseas
D_2=Foreign universities, industry, Government, etc.

ment, in secondary education, in educational and other associations and nonprofit agencies, in industry, private practice, and by self-employment, etc. Employment may be within the United States or overseas.

O = doctorates employed in foreign countries, foreign nationals employed in foreign universities, and in other types of employment in foreign countries.

G = graduate students in foreign educational institutions, U.S. nationals who may receive doctorates or equivalent training from foreign institutions.

F, S, D, O, and G each provide part of the higher educational faculty the following year. The transition of the faculty from t_1 to t_2 occasions losses to each of the other activities previously mentioned, even "student" status, identified in the model as P. In addition, losses may be attributed to death and to retirement. In the case of retirement, the transition may be a change from full-time teaching or research to part-time (paid) teaching or research, or, the retiree may shift his sector affiliation from higher education to one of the other sectors. Our interest, of course, is only in those shifting into or out of higher education.

If the size of each of the elements in the model were known, the analysis of the supply and demand of college teachers would be simple. Few of the ingredients, however, are known with certainty. Little data are available to determine G, particularly the number who graduate and return to the United States. The number of doctorates outside the academic sector, D_1, is known only vaguely through (1) the National Register of Scientific and Technical Personnel and similar registers, or through (2) estimates of the number of living doctorates. The latter accounts only for U.S.-granted degrees; it does not consider, for lack of information, the migration to other countries of those granted U. S. degrees, and does not account for the large number of degree-holders of foreign origin (O_1) who make important contributions to American education.[5]

Not only is information on the aggregate numbers at t_1 and t_2 insufficient, but the rates of transition between time periods can only be estimated.

This report attempts to identify the essential elements in the model and to project the supply-demand relationship to 1975–76 from the best available data. Since many of the aggregates and parameters of the model are approximations, no claim is made that a rigorous and final answer has been found. However, the nine alternative assumptions are presented together with the results of their application to the data.

IV. ENROLLMENT PROJECTIONS

The basis for this part of the study is the population of students beyond secondary school enrolled in degree-credit courses. Two "standard" projections of total college enrollment are available: projections by the U.S. Office of Education and the U.S. Bureau of the Census.[6] Degree-credit is an important category of the USOE data, but not of the Census data. However, the magnitude of enrollment reported is very similar for both series.

The USOE projections of degree-credit enrollment are based upon the 18- to 21-year-old population by sex, and are generated separately for both sexes, two forms of institutional control (public and private), and two types of institutions (2-year and 4-year). Altogether there are eight categories. The percentage of the population attending school during the past 10 years is the basis for projecting the next 10 years. In the most recently published projections by USOE, eight regression equations are used to project an enrollment increase in seven of the institutional categories, an increase ranging from 0.022 percent per year for women in private 2-year institutions, to 0.89 percent per year for women in public 4-year institutions. The eighth category, men in private 4-year institutions, is projected to decline 0.11 percent annually. This extension of past trends leads to results that are quite similar to the projection procedures employed by the Bureau of the Census, procedures substantially different from the USOE method.

Census Bureau projections are based on the population by single year of age and sex, the ages running to 34 years, and upon assumed rates of attendance for these age-sex groups. The attendance rates are assumed to increase between 1963–65 and 1990, a period of 26 years, by the same percentage as the attendance rates between 1950–52 and 1963–64, a period of 13 years. "In effect, since the projection period was about twice as long as the base period," the Census report states, "the proportions were assumed to change about one-half as rapidly in the future as in the recent past."[7] In another statement of the same procedure, the Census Bureau explains that the projection "assumes that the decline in the 'nonenrollment rates' will continue at the annual rate observed for the period of 1950–52 to 1963–65. The complements of these rates are the enrollment rates."[8]

The Census Bureau projection of total enrollment by sex was adjusted to the USOE degree-credit series, so that the projections presented in table 2 are basically the Census Bureau projections. The adjustment was made by establishing the regression of the USOE series on the Census series.

V. PROJECTIONS OF DEGREE CREDIT ENROLLMENT IN HIGHER EDUCATION

The projections of degree credit enrollment in higher education (table 2) are based upon the Census Bureau's D–1 series.[9] The fertility assumptions used in the D population projection do not affect the college population over the period of time here considered, to 1976. The "1" implies a moderate rise in enrollment rates. The Census Bureau projections were adjusted to reflect USOE degree credit enrollment. The adjustment was made for each sex separately, using 1958–1966 as the base period. The regression of the Census series and the degree credit enrollment series was established, as follows:

$$^{Y}\text{men} = 1.0594 \times - 117$$
$$^{Y}\text{women} = 1.0391 \times - 136$$

The total was then distributed between graduate and undergraduate according to the trend in the percentage of graduate enrollment of total enrollment. The trend was assumed to increase by the average of the increment over the past 10 years, or .0013 per year. From 10.6 percent in 1966, the graduate enrollment was assumed to reach 12 percent of the total in 1977.

Enrollment projections were adjusted to equal the most recent available degree credit enrollment survey.

The resulting projection is 9.9 percent greater than the USOE degree credit projection and 5.6 percent greater than the Census projections.

The projection of total enrollment in table 2 shows an average annual increase of 5.3 percent, 1968 to 1976. Most of this increase may be attributed to the assumed change in the rate of attendance, rather than marked increases in the population base, chiefly the 18- to 21-year-olds.

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[5] U.S. House of Representatives, Committee on Government Operations, *The Brain Drain into the United States of Scientists, Engineers, and Physicians*. Washington, D.C.: U.S. Government Printing Office, 1967.

[6] U.S. Office of Education, *op. cit.* and U.S. Bureau of the Census, "Summary of Demographic Projections," *Current Population Reports*, Population Estimates, Series P–25, No. 388, March 14, 1968. Washington, D.C.: U.S. Bureau of the Census, 1968.

[7] U.S. Bureau of the Census, "Revised Projections of School and College Enrollment in the United States to 1985," *Current Population Reports*, Population Estimates, Series P–25, No. 365. Washington, D.C.: U.S. Bureau of the Census, May 5, 1967.

[8] U.S. Bureau of the Census, "Summary of Demographic Projections," *op. cit.*

[9] *Ibid.*

Table 2—*Degree Credit Enrollment by Sex and Graduate-undergraduate Status, Actual 1957 to 1966 and Projected 1967 to 1976*

Fall	Total (000)	Male (000)	Female (000)	Undergraduate (000)	Graduate (000)
1957	3,047	1,991	1,056	2,759	288
1958	3,236	2,098	1,138	2,924	312
1959	3,377	2,161	1,216	3,046	331
1960	3,583	2,257	1,326	3,227	356
1961	3,861	2,409	1,452	3,475	386
1962	4,175	2,587	1,588	3,753	422
1963	4,495	2,773	1,722	4,031	464
1964	4,950	3,033	1,917	4,433	517
1965	5,526	3,375	2,152	4,944	582
1966	5,885	3,554	2,331	5,261	624
1967	6,348	3,800	2,548	5,660	688
1968	6,983	4,286	2,710	6,234	749
1969	7,320	4,521	2,799	6,516	804
1970	7,702	4,757	2,945	6,846	856
1971	8,145	5,021	3,124	7,229	916
1972	8,609	5,285	3,324	7,629	980
1973	9,082	5,557	3,525	8,037	1,045
1974	9,542	5,825	3,717	8,431	1,111
1975	9,996	6,091	3,905	8,820	1,176
1976	10,422	6,341	4,081	9,182	1,240

Source and Procedure: To 1968 (U.S. Office of Education, 1969: 16, 20); partly estimated 1966-1968. Projections are based upon U.S. Bureau of the Census projections of enrollment, series D1 (Census, 1968: 49). The regression of the USOE degree-credit series on the Census series was used to project enrollment. The projection above is essentially the Census series, adjusted to represent USOE degree-credit enrollment. The percent graduate enrollment was regressed on time to provide the graduate-undergraduate dichotomy.

Total enrollment in 1976 is 49.2 percent greater than the 1968 enrollment. The continuation of the 1951 to 1964 trend in attendance rates leads to an increase in total enrollment to 10.4 million in 1976, representing approximately a 50 percent increase over 1968 enrollment. Other things being equal, the demand for faculty may be expected to increase proportionately. This, however, will be examined later.

VI. COMPARISON WITH OTHER PROJECTIONS OF ENROLLMENT

In table 3, enrollment projections of table 2 are compared with four other enrollment projections. Each comparison will be briefly discussed.

Cartter's Use of USOE The enrollment projections assumed by Cartter were the U.S. Office of Education projections, with enrollment for fall 1964 being the most recent actual data available.[10] Extended into the future, 1965 projections declined from 91 percent of the adjusted Census projections (table 2) to 87 percent in 1976 (table 3).

U.S. Office of Education The most recent USOE projections (1969) are closer to the adjusted Census projections than the earlier ones used by Cartter.[11] The projection for 1969 is 94 percent of the adjusted Census projection and the projection for 1976 is 90 percent of the adjusted Census projection. While the two are closer together, the 10 percentage points difference in 1976 represents approximately 1 million students.

Froomkin-Pfeferman Two projections by Froomkin and Pfeferman are based upon a more complicated model than those previously described.[12] The OPPE (Office of Program Planning and Evaluation, USOE) model produces future enrollments that fall within 3 percent of the adjusted Census projections. A second model was designed to assume maximum opportunity to enroll. It provides varying enrollment projections from 8 to 14 percent greater than the adjusted Census projections, depending upon the year. The bases for the Froomkin-Pfeferman projections will be briefly sketched.

The Froomkin-Pfeferman model applies differential rates of attendance to high school graduates, relative to academic achievement and financial resources. It takes into consideration the year of enrollment after high school graduation, and it introduces different rates of persistence in college. It relies upon evidence from Project TALENT, a project that has followed up cohorts of high school graduates at various times, particularly in 1960 and 1968. The change in one of the important determinants of college attendance, the expectation of high school seniors of attending college, is shown as follows:

Percent of High School Seniors Expecting to Attend College in the Fall (Project Talent)

Income quartile		1959	1966	Change
High	4	68	74	+ 6
	3	52	65	+13
	2	40	52	+12
Low	1	23	46	+23

(Source: Froomkin and Pfeferman, 1969: 1, 2.)

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[10] Allan M. Cartter, "The Supply and Demand of College Teachers," Proceedings of the Social Statistics Sec., American Statistical Association, 1965, pp. 70–80.

[11] U.S. Office of Education, *Projections. . . , op. cit.*

[12] Joseph Froomkin and Murray Pfeferman, "A Computer Model to Measure the Requirements for Student Aid in Higher Education," Washington, D.C.: U.S. Office of Education, Office of Program Planning and Evaluation, 1969, mimeographed.

Of all high school seniors who enrolled in college in 1960, only 10 percent were from families in the lowest income quartile. By the fall of 1968, 12 percent of college-bound seniors came from the lowest income quartile families. The Froomkin-Pfeferman OPPE model projects this percentage to 15 percent in 1976. In a similar manner, the OPPE model includes the timing of entry into college and assumes attrition rates upon evidence from successive studies of Project TALENT populations. The authors consider that the OPPE model presents "a much more realistic representation of the social demand for educaton at the postsecondary level than past (trend) projections."[13] However, as has been stated, the OPPE model gives results that differ from the adjusted Census projections by relatively small percentages (0.1 to 2.7 percent) over the 8 years, 1969 to 1976.

By introducing the assumption that the enrollment and retention rates of the students from families in the highest income quartile would apply to children from families of lesser income, Froomkin-Pfeferman developed what they term "the complete equality" projection. This would increase the 1976 enrollment from 10.3 to 11.2 million. This projection is almost 14 percent greater than the adjusted Census enrollment projection, as is shown in table 3. However, differences decrease with time.

TABLE 3—*Ratio Total Degree Credit Enrollment Projections to Other Models*

	OPPE [1]	Equality [2]	USOE [3]	Assumed by Cartter [4]
1969	1.014	—	.943	.912
1970	1.016	1.129	.932	.906
1971	1.021	1.140	.924	.898
1972	1.027	1.127	.920	.891
1973	1.023	1.118	.916	.884
1974	1.013	1.102	.911	.880
1975	1.001	1.086	.906	.875
1976	0.992	1.075	.901	.871

[1] Froomkin and Pfeferman, 1969: 8.
[2] *Ibid*, p. 15, estimated.
[3] U.S. Office of Education, 1969: 16.
[4] Cartter, 1965: 75.
Note: The statistic presented is each of the series above divided by the FTE enrollment projection of column 1, table 1.

The adjusted Census projection, then, may be assessed as greater (approximately 6 to 10 percent) than the "standard" USOE projection, slightly smaller (0 to 3 percent) than the OPPE model projection, and much smaller than the complete equality model that assumes a maximum opportunity enrollment.

If one prefers other enrollment projections than the one here developed, the ratios in table 3 may be applied to the faculty demand schedule (table 6), to adjust the demand estimates to these other assumptions about future enrollment.

VII. THE DEMAND FOR TEACHERS

To project the future demand for college teachers, one first must establish the relation between teachers and students that has prevailed in the past. Previous projections of demand have not agreed with one another, partly because they have used different definitions of "teacher," different aggregates measuring enrollment, etc. For example, in his much discussed study that raised the "serious question of public policy" concerning the need for additional doctoral-level institutions, Cartter used full-time plus part-time instructional staff at the level of instructor and above as the base.[14] His 1963–64 base counted 100,898 part-time instructional staff as full-time and excluded 52,694 [15] junior staff, some of whom were part-time. USOE uses FTE faculty but apparently pools full-time and part-time students.[16] The effect of disregarding this refinement is illustrated by 1963–64 data as follows:

Ratios of Enrollment and Faculty, 1963-64

	Cartter	U.S. Office of Education	FTE basis
Enrollment	4,495,000	4,494,626 (Total)	3,542,800
Faculty	298,900	252,013 (FTE)	265,221
E/F	15.04	17.83	13.36
F/E	.064	.056	.075

Cartter points out the desirability of using the FTE base for both faculty and students, but he proceeds to take USOE to task for projecting a student/staff ratio of 18 students per faculty member, saying it had averaged 19.3 with no trend over time either up or down.[17] USOE, on the other hand, employs the FTE basis for faculty, but pools full-time and part-time students, as shown in the preceding table.[18] Their procedure, however, is more complicated than it appears. They employ the regression of the student/staff ratio on time, separately computed for four institutional categories (public-private, by 2-year/4-year institutions).

The difference between (my) FTE base for faculty and the FTE faculty of USOE lies in a slightly different part-time to FTE conversion ratio. I assume that the "observed" ratio for 1966 also applied in 1963 and prior years.[19]

The data make abundantly clear that the interpretation of the ratio of enrollment to faculty depends heavily upon the conception or definition of the statistics entering into the ratios.

Although the data available on FTE faculty and enrollment require that one make a number of estimates and assumptions, these adjustments appear to be necessary and desirable. Consequently, table 6 is based upon FTE estimates.

VIII. THE PROCEDURE FOR ESTIMATING DEMAND FOR TEACHERS

While the detailed steps for estimating the demand for teachers are given with each table (tables 4–6), a brief description of the procedure is necessary here.

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[13] *Ibid.*, p. 6.

[14] A. M. Cartter, *op. cit.*, pp. 74, 78.

[15] The 52,694 figure is from U.S. Office of Education, *Numbers and Characteristics of Employees in Institutions of Higher Education, Fall 1966.* Washington, D.C.: USOE, 1969.

[16] U.S. Office of Education, *Projections. . . ., op. cit.*

[17] A. M. Cartter, *op. cit.* p. 71.

[18] U.S. Office of Education, *Projections. . . ., op. cit.*, pp. 16, 56, 110, 113.

[19] U.S. Office of Education, *Numbers and Characteristics of Employees. . . ., op. cit.*, p. 4.

TABLE 4—*Faculty for Resident Instruction and Departmental Research*

	Senior Staff			Junior Staff			FTE Total Teaching & Departmental Research
	Full-time	Part-time	FTE Total	Full-time	Part-time	FTE Total	
1959-60[1]	163,656	80,805	189,283	(38,619)		20,414	209,697
1960-61	—	—	—	—		—	—
1961-62[1]	178,632	89,992	208,277	(46,063)		24,349	232,626
1962-63	—	—	—	—		—	—
1963-64[1]	204,561	100,898	237,367	(52,694)		27,854	265,221
1964-65	—	—	—	—		—	—
1965-66	—	—	—	—		—	—
1966-67[2]	280,478	83,647	309,560	17,129	66,806	44,365	353,925

Source and Procedure: 1959, 1961 and 1964 data are from USOE, *Faculty and Other Professional Staff* . . . (1966: 9). The data for junior staff was not available from the survey; the FTE for junior staff is estimated on the basis of the observed 1966 ratio. The 1966 data are from USOE, *Numbers and Characteristics of Employees* . . . (1969, p. 3) .

[1] USOE, *Faculty and Other Professional Staff,* (1966: p. 9) with FTE for junior staff estimated on basis of 1966 ratio.

[2] USOE, *Numbers and Characteristics of Employees* . . . (1969, p. 3) and FTE junior staff estimated upon basis of 1966 ratio.

TABLE 5—*Full-time Equivalent Teaching Staff, Enrollment, and Ratios, with Projections to 1976*

	FTE Total Teaching & Departmental Research	FTE Enrollment (000)	FTE S/F	FTE F/S
1959-60	208,696	2,668.0	12.72	.07859
1960-61	—	—	—	—
1961-62	232,621	3,096.0	13.31	.07513
1962-63	—	—	—	—
1963-64	265,221	3,542.8	13.36	.07486
1964-65	—	—	—	—
1965-66	—	—	—	—
1966-67	353,925	4,781.1	13.51	.07402
1967-68	—	5,155.4	—	.07292
1968-69	—	5,670.9	—	.07236
1969-70	—	5,944.6	—	.07180
1970-71	—	6,254.8	—	.07125
1971-72	—	6,614.6	—	.07069
1972-73		6,991.4	—	.07013
1973-74	—	7,375.5	—	.06958
1974-75	—	7,749.1	—	.06920
1975-76	—	8,117.8	14.61	.06846

Source and Procedure: Sec. 5 describes the development of the FTE Enrollment Projection. The FTE staff comes from table 4. The Faculty/Student ratio for the years between the observations was assumed to fall along a straight line between the observed values. These F/S values, fall 1959 to fall 1966, were the basis for the regression of the ratio on time. The annual increment is—.000557. This increment was doubled for the "double trend" projection shown in column 3 of table 6.

Table 4 shows the recent data on the status of instructional faculty. There is no other comprehensive assemblage of data on faculty. The National Science Foundation series covers only scientific activities of colleges and universities. The American Council on Education excludes some institutions. The Bureau of the Census reports occupation decennially, but does not present college and university employment as a single category.

The series shown in the last column of table 4 is reproduced in table 5 as the basis for projections. The 1966–67 percentage distribution of staff is the basis for determining the number of full-time senior staff required in the future; that is, the fall 1966 distribution was assumed constant to 1975.

Table 5 relates the FTE staff to FTE enrollment. The FTE enrollment comes from table 4, developed as described in section 5. Both ratios, student/faculty and faculty/student are shown, although only the faculty/student ratio was projected. FTE S/F is shown because it is more easily interpreted than the F/S ratio. The application of the projection of the F/S ratio to FTE enrollment provides the projections in table 6.

Three alternative projections are presented in table 6. For comparison, the USOE projection and two Byrnes projections[20] are also presented. All are expressed as FTE teaching staff.

Column 1 holds constant the fall 1966 FTE Enrollment/Faculty ratio of 13.51. Such a schedule would require an 86

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[20] James C. Byrnes, "The Demand and Supply of Instructional Staff in Higher Education," in *Education in the Seventies,* Washington, D.C.: U.S. Office of Education, 1968, pp. 17–22.

Table 6—*Projections of FTE Teaching Faculty*

	Required FTE Faculty (000) Constant	Required FTE Faculty (000) Trend	Required FTE Faculty (000) Double the Increment of the Trend in Teacher Load	USOE (000)	Byrnes Medium B (000)	Medium B (000)
	1	2	3	4	5	6
1967-68	381.6	375.9	373.0		378	414
1968-69	419.8	410.3	404.0	358.0	397	444
1969-70	440.0	426.8	416.9	362.0	410	468
1970-71	463.0	445.6	432.8	373.0	426	492
1971-72	489.6	467.6	449.2	387.0	440	515
1972-73	517.5	490.3	467.0	403.0	450	536
1973-74	545.9	513.2	491.7	421.0	460	555
1974-75	573.6	536.2	500.2	436.0	—	—
1975-76	600.9	557.4	514.9	450.0	—	—
1976-77	626.5	574.8	527.4	462.0	—	—

Sources and Procedure: Columns 1 through 3 are based upon the procedure outlined in table 5. Column 1 assumes a constant Student/Staff ratio of 13.51; column 2 assumes the continuation of the fall 1959-fall 1966 trend; column 3 assumes a continuation of double the annual increment in the trend; column 4 is from USOE *Projections . . .* (1969: p. 56); columns 5 and 6 are from Byrnes (1969: pp. 18 and 20).

percent increase in FTE staff, between fall 1966 and fall 1976. In the 7 years from fall 1959 to fall 1966, FTE staff increased almost 70 percent. Consequently, one cannot rule out completely that the column 1 schedule of expansion is possible although it would be difficult. Such rapid expansion might result in an erosion in the quality of staff so that the low student/staff ratio would not be as beneficial as one might presume it to be. The column 1 schedule of expansion resembles column 6, the Byrnes B-Medium Projection, based upon a constant student/faculty ratio of 13.5. The differences in the two series lie partly in the slightly different FTE enrollment assumed by Byrnes.[21]

The demand for teachers presented in table 6, column 2, assumes that the 1959–1966 trend in the student/staff ratio will continue at the same annual increment. The effect of the trend is to increase the student/staff ratio from 13.51 in fall 1966 to 14.7 in fall 1976. This appears to be a modest and reasonable increase in student load, one that might easily be made without loss of the quality of instruction. It produces a demand schedule increasingly greater than the B-Medium Projection of Byrnes, which assumes an expansion in teaching load, in Byrnes' terms, from 14.8 to 16.3 over the 6-year period.

Column 3 presents a demand schedule based upon an increment twice the size of the increment that was observed between 1959–1966 and used for the column 2 projection. This increment has the effect of increasing the teaching load from 13.5 to 16.0 over the 10-year period. The column 3 schedule resembles the Byrnes' B schedule shown in column 5, varying from it between 1.7 and 7.0 percent over the 7 years. The Column 3 schedule, although based upon twice the increment in student/staff load indicated by past trends, appears to provide a reasonable expansion in faculty. The column 3 schedule is employed in the assessment of the adequacy of doctorate production, presented later.

For comparison, the USOE projection is presented in column 4. In terms of (my) enrollment projection, the USOE FTE teacher demand schedule implies an increase of from 15.8 students per teacher in fall 1968 to 18.3 students per teacher in fall 1976.

IX. THE REPLACEMENT RATE

The 1963 Study In 1963, James F. Rogers asked a sample of 360 institutions to report the number of full- and part-time staff for "academic affairs," and the number of replacements and additions the institution would need between then and October 1969.[22] Using only his data for full-time staff, a schedule of additions and replacements was developed in order to determine the replacement rate implied by the responses from the institutions (table 7). The additions to the staff were assumed to be proportional to the increment in enrollment.[23] Replacements were assumed to be proportional to the aggregate size of the academic staff. Altogether, as table 7 shows, the staff of 209,060 in fall 1963 was expected by the institutions to expand by 1969 to 326,883, and the institutions anticipated they would need 40,985 replacements over the 6 years. The average replacement rate was 2.568 percent of the academic staff (administrative staff and staff for technical and semiprofessional work in research or in teaching of noncredit courses, were excluded from this computation).

The 1963 survey defined replacements as those who were expected to retire or who would leave the institution's employment for any reason. The latter were to be based upon the institution's experience over the previous 6 years. The instructions to the institution asked that staff members be excluded who might be expected to transfer to another institution. The latter rule is particularly important for our purposes, since it eliminated the report of personnel who remain in higher education but merely move to another institution.

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[21] *Ibid.*, pp. 18, 20.

[22] James F. Rogers, *op. cit.*

[23] U.S. Office of Education, *Projections. . . .*, *op. cit.*, p. 12.

TABLE 7—*Derivation of Replacement Rate from Rogers' Data*

Fall	Full-time Academic Staff	Additions Needed for Next Year	Replacements Needed for Next Year	Replacement Rate
	1	2	3	4
1963	209,060	22,268	5,369	.02568
1964	231,328	28,160	5,943	.02569
1965	259,488	17,556	6,640	.02559
1966	277,044	22,504	7,131	.02574
1967	299,548	20,148	7,705	.02572
1968	319,696	7,187	8,197	.02564
1969	326,883	—	—	—
Total	—	117,823	40,985	—
Mean	—	—	—	.02568

Source and Procedure: The Fall 1963 full-time academic staff and the total additions and replacements needed by fall 1969 were reported by the institutions (Rogers, 1967: 11). The total in column 2 was distributed by year proportional to the increment in enrollment, as enrollment is reported and estimated by USOE, *Projections . . .* (1969: 12). Each column total was obtained by adding the scheduled additions in column 2 to the total staff in column 1. Total replacements, column 3, were scheduled each year to be proportional to the total staff of that year. The rate, column 4, is column 3 divided by column 1. Since column 3 was made proportional to column 1, one would expect to obtain a uniform rate.

The aggregate number of full-time academic staff after 1963 reported by the Rogers' study does not include estimates for institutions established after the 1963 survey.

The details of the procedure for deriving the replacement rate from the Rogers' data are presented as part of table 7.

The defect in this result (the replacement rate of 2.568 percent) lies in the assumption of uniform rate. As higher education staff has expanded, younger rather than older personnel have been added. The age distribution of the faculty has undoubtedly shown greater increases among younger ages, and the rate of staff losses through mortality and through retirement might be expected to be declining.

Secondly, the mobility of staff in response to salary differentials in other industries is not constant. There is evidence that during the 10 years ending with 1968 the salaries paid by educational institutions to scientists in most all fields have been improving with respect to the salaries paid by the Federal Government, by business and industry, and salaries earned through self-employment.[24] However, the trend over time has not been uniform. The median salary paid by educational institutions to Ph.D. scientists during 1956–58 was 89 percent of the median paid to Ph.D. scientists by the Federal Government. By 1964, the median salary paid Ph.D. scientists by educational institutions had declined to 81 percent of the median paid by the Federal Government. After this, however, the competitive advantage of the academy improved. By 1968 the median salary paid to all scientists in educational institutions was equal to the median received by those in Federal employment. These changes in the competitive advantage of higher education undoubtedly have affected mobility, loss, and retention of the academic staff. Additional evidence of mobility of staff is presented below.

The Bolt, Koltun, Levine Study In many ways one of the most carefully designed and executed analyses of the supply and demand for teachers in higher education, "Doctoral Feed-Back into Higher Education,"[25] generated the following rates applicable to doctoral scientists:

Mortality	0.009
Retirement	0.006
Transfer attrition	0.002
Total	0.017

The Cartter Study In his 1965 study of the supply and demand of college faculty, Cartter criticizes the use of a 6 percent replacement rate used by the Office of Education.[26] However, the rate he uses in that study was made up of the following elements:

c. the out-transfer rate of doctorate leaving teaching for other employment	0.0321
m. mortality rate of present teachers	0.0069
r. retirement rate of present teachers	0.0112
Total	0.0502

U.S. Office of Education Projections In the USOE Projections, 0.06 is applied as the replacement rate of those leaving higher education for all purposes.[27] The rate is applied to the full-time equivalent staff, rather than the total staff. As Bolt, Koltun, and Levine have indicated, an attrition rate applied to FTE must be slightly larger than an attrition rate applied to the number of different persons. In their study, they estimate that the difference in rate is 0.003. If we deduct this from the USOE rate, which applies to FTE, the result is 0.057, which is only slightly larger than the Cartter factor. However, in the calculations presented here, the full 0.06 rate is used (table 8, column 9).

Other Studies Various other replacement rates have been used, but all of them fall within the ranges set forth. Folger chose to use 0.02 annually in his study.[28] Berelson used 0.04

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[24] Abbott L. Ferriss, *Indicators of Trends in American Education*. New York: The Russell Sage Foundation, 1969, pp. 229–233.

[25] Bolt, Koltun and Levine, *op. cit.*

[26] A. M. Cartter, *op. cit.*, p. 71.

[27] U.S. Office of Education, *Projections. . . .*, *op. cit.*, pp. 41–64.

[28] John K. Folger, "The Balance Between Supply and Demand for College Graduates," *The Journal of Human Resources II* (Spring 1967), pp. 143–169.

per year.[29] Maul, in his 1965 studies for NEA, used different rates, depending upon the type of institution, variously 0.085 to 0.05.[30]

Rather than dictate that one rate is more valid than another, three replacement rates were chosen from previous studies to give a range of possibilities. While retirement and mortality rates may be changing slightly, as has been suggested, they undoubtedly are more stable rates than the rate of out-transfer. The latter is likely to vary with the competitive position of academic employment, with opportunities for research support within or outside educational institutions, and with other factors. As the next section will show, the transfer rate cannot be reliably estimated. Consequently, in estimating the demand for full-time senior instructional staff, the consequences of three replacement rates are assessed.

Table 8 presents the distribution of required staff, by status of the staff as observed in the fall of 1966. The critical element in staffing is the full-time senior staff. Columns 6 through 9 of the table show replacements needed under the several assumed rates. The additions needed to expand the staff according to the schedule of column 2 are shown in column 10. Replacements implied in columns 6, 8, and 9 are used as assumptions in developing the demand for doctorates. For future reference, these are designated B, C, and A, respectively. Table 9 is a summation of the demand schedule shown in table 8.

TABLE 9—*Full-time Senior Staff for Instruction and Departmental Research: Aggregate Demand Under Three Assumptions*

	(Bolt) A	(Rogers) B	(USOE) C
1966-67 (actual)	19.9	22.3	31.9
1967-68	30.0	32.6	42.7
1968-69	14.9	17.7	28.7
1969-70	19.6	22.5	33.8
1970-71	18.8	21.8	33.6
1971-72	20.1	23.2	35.3
1972-73	25.9	29.1	41.8
1973-74	13.3	16.7	30.1
1974-75	18.4	21.9	35.5
1975-76	16.8	20.4	34.4

Source and Procedure: The aggregates in the table result from table 8, and show the total new full-time senior instructional staff needed under the three assumptions set forth in that table.

TABLE 8—*Full-time Equivalent Instructional Staff Projected to 1976-1977, and Replacements and Additions Needed Annually to the Full-time Staff*

	FTE Teachers Required	Instructional Staff				Full-time Senior Staff Replacements Needed for the Following Year				Additions Needed for the Following Year
		Senior Staff		Junior Staff						
		Full-time	Part-time	Full-time	Part-time	(Rogers) B	(Cartter) —	(USOE) C	(Bolt) A	
	1	2	3	4	5	6	7	8	9	10
1966-67 Ratio to FTE		.7925	.2363	.0484	.1888					
					In Thousands					
1966-67 (actual)	353.9	280.5	83.6	17.1	66.8	7.2	14.1	16.8	4.8	15.1
1967-68	373.0	295.6	88.1	18.0	70.4	7.6	14.8	17.7	5.0	25.0
1968-69	404.0	320.2	95.5	19.6	76.3	8.2	16.1	19.2	5.4	9.5
1969-70	416.9	329.7	98.5	20.2	78.7	8.5	16.6	19.8	5.6	14.0
1970-71	432.8	343.0	102.3	20.9	81.7	8.8	17.2	20.6	5.8	13.0
1971-72	449.2	356.0	106.1	21.7	84.8	9.1	17.9	21.4	6.0	14.1
1972-73	467.0	370.1	110.4	22.6	88.2	19.5	18.6	22.2	6.3	19.6
1973-74	491.7	389.7	116.2	23.8	92.8	10.0	19.6	23.4	6.6	6.7
1974-75	500.2	396.4	118.2	24.2	94.4	10.2	19.9	23.8	6.7	11.7
1975-76	514.9	408.1	121.7	24.9	97.2	10.5	20.5	24.5	6.9	9.9
1976-77	527.4	418.0	124.6	25.5	99.6	—	—	—	—	—

Source and Procedure: Column 1 is reproduced from Table 1. Columns 2 through 5 result from the application of the ratios in the first row to the FTE teacher requirement in column 1. The ratios are those observed in fall 1966. Columns 6 through 9 reflect the application of various assumptions of the replacement rate. These assumptions are those made by others and used in other studies. These assumptions are, as follows: Column 6, (Bolt, Koltun, Levine, 1965: 921), a replacement rate of 0.17, applicable to doctoral scientists and engineers; Column 7, (Rogers, 1967) as derived and explained in table 7, a replacement rate of 0.2568; Column 8, (Cartter, 1965: 73), a rate of .0502; Column 9, (USOE, *Projections . . .* 1969: 63), a rate of .06. Column 6, the additional full-time staff needed because of increased enrollment, is obtained by subtraction from Column 2. Columns 6 through 10 refer to full-time staff, Column 2.

X. MOBILITY OF DOCTORATE SCIENTISTS

Biennially the National Register of Scientific and Technical Personnel assembles data on the Nation's scientists. Among other things, the scientists report their type of employer. By tracing the same cohort of scientists from one time period to another mobility rates may be determined. Table 10 shows the employers of 45,165 doctoral scientists in 1960 and in 1962. The same cohort is traced further, with some loss of cases through nonresponse, from 1962 to 1964. The first panel of the table shows a loss rate of 9.12 percent over the 2-year period. The second panel, for the mobility between 1962 and 1964, shows a loss of 5.56 percent.

The 1960 to 1962 loss of doctoral scientists from educational institutions was repaired almost evenly by transfers into educa-

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[29] Bernard Berelson, *Graduate Education in the United States*. McGraw-Hill, 1960.

[30] Ray C. Maul, "Teacher Supply and Demand in Universities, Colleges and Junior Colleges, 1963–64 and 1964–65," *Research Report 1965–R4*. National Education Association, 1965.

Table 10—*Mobility of a Cohort of Doctoral Scientists into and out of Educational Institutions, 1960-62 and 1962-64*

Employer 1960	Total	Employer 1962 Educational Institutions	Other	Loss Rate
Total	45,165	20,718	24,447	—
Educational Institutions	20,683	18,796	1,887	.0912
Other	24,482	1,922	22,560	—
Employer 1962		**Employer 1964**		
Total	34,673	16,894	17,779	—
Educational Institutions	16,004	15,114	890	.0556
Other	18,669	1,780	16,889	—

Source: (Select Committee on Government Research, 1964: 74) for 1960-62 and unpublished data 1962-64, courtesy, National Register of Scientific and Technical Personnel, 1964, National Science Foundation.

tional institutions from other sectors, a net gain of .0017. The exchange, 1962 to 1964, however, was much more advantageous to the educational establishment. There was a net gain of 1,780 doctoral scientists, representing a net increase of 5.56 percent in this exchange over the 2 years.

The import of this is that the loss rate through mobility of doctorate scientists to employment in other sectors varies considerably over time. It cannot be assumed to be near zero, as Cartter assumed it to be (0.11 percent net loss),[31] nor as Bolt, Koltun, and Levine assumed it to be (0.2 percent net loss).[32] The mobility of educators is more volatile than this. To be properly accounted for, systematic, repeated collections of data are needed. In the absence of such information, recourse must be made to assess the consequences of assumed marginal parameters, as was done in the preceding section.

XI. FIRST EMPLOYMENT AFTER RECEIVING THE DOCTORATE

The National Academy of Sciences annually collects information on the first postdoctoral job of persons newly-awarded the doctorate degree. Both the type of employer, i.e., Federal Government, college or university, elementary or secondary school, etc., are determined as well as the kind of activity of the job. The latter includes administration, research, teaching, fellowship, and so forth. Unfortunately for our purposes, the data are not presented for college and university by type of activity, and some of the available data (1968 and 1969) do not separate educational institutions into higher education and elementary and secondary educational institutions. Consequently, the percentages for 1967 and 1968 in table 11 are estimates from the available data.

It is reasonable to assume that not all new doctorates who are employed by colleges and universities engage in teaching. Similarly, not all doctorate teachers are in higher education. However, since only 5 to 6 percent of new doctorate positions are in elementary and secondary schools, one might assume that only 2 or 3 percent of all doctorates enter (or continue) teaching in elementary and secondary schools. Others are in research or administration in the precollege school systems. By deducting 3 percent from the 1968 percentage of new doctorates entering teaching, we arrive at an approximation of 50 percent of new doctorates whose first postdoctoral job is teaching in higher education. This percentage is applied to the projection of doctorates (appendix table A5) to provide an estimate of new doctorates entering teaching in higher education.

Table 11—*First Postdoctoral Employer and Activity of Doctorates, 1958-60 to 1968*

	Type of Employer College and University	Type of Activity Teaching
1958-60	58%	—
1961-63	59%	—
1962-63	—	42%
1964-66	61%	45%
1967	57%	52%
1968	58%	53%

Source: National Academy of Sciences (1967: pp. 82, 86), (1968: p. 6), and (1969: p. 6). 1967 and 1968 are based upon reports on the percent going into educational institutions, which include elementary and secondary. It was assumed that in 1967 and 1968 5 percent were going into below-college work, the percent reported for 1964-66.

XII. AN ESTIMATE OF THE SUPPLY OF DOCTORATES FROM THE NONACADEMIC SECTOR

The supply of doctorates from university graduating classes is annually determined, as just described, and stands as a reliable estimate of the major supply of doctorate teachers. The number who transfer from nonacademic to academic employment, however, is more difficult to estimate. There is no determination made for this aspect of higher education manpower, except that segment described in section 10 on the mobility of doctorate scientists.

An attempt to estimate the number of doctorates transferring from nonacademic to academic teaching assignments is presented in table 12. It rests upon the reported decrease in the percent of full-time senior instructional staff from 48.9 percent in 1963[33] to 44.1 percent in fall 1966.[34] It also rests upon the reported first postdoctoral teaching assignments of the doctorate graduating classes during the period 1964–66. This schedule, described in the notes to table 12, leads to a total of 32,040 doctorates added to the full-time teaching staff, only 22,138 of them coming from new doctorate graduating classes. The remainder, 9,902, then may be assumed to have transferred from nonacademic sources or to have changed their activity to teaching, if they already were employed in colleges and universities. This is an average of 3,400 annually. This average would seem to be a number one might reasonably expect at present to transfer from nonacademic to academic employment as teachers. Owing to the increasing annual increment to the population holding the doctorate degree, the doctorate transfers could be assumed to scale upward in the future.

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[31] A. M. Cartter, *op. cit.*, p. 74.

[32] Bolt, Koltun, and Levine, *op. cit.*, p. 921.

[33] J. F. Rogers, *op. cit.*, p. 15.

[34] U.S. Office of Education, *Numbers and Characteristics of Employees. . . .*, *op. cit.*, p. 11.

TABLE 12—*Estimate of New Full-time Senior Instructional Staff with Doctorate, 1963-64 to 1966-67*

	Full-time Teaching Doctors	Replacements	Additions	Total Required	From Graduating Classes	From Other Sources
1963-64	100,030	2,569	7,950	10,519	6,520	3,999
1964-65	107,980	2,773	10,320	13,093	7,410	5,683
1965-66	118,330	3,038	5,630	8,668	8,208	460
1966-67	123,930	—	—	—	—	—
Total	326,550	—	—	32,040	22,138	10,142

Source and Procedure: The 1963-64 estimate of doctorates on the full-time senior instructional staff is from Rogers (1967: 15), which shows 48.9 percent doctorates. This percentage is applied to the estimate of full-time senior staff in 1963-64, as reported by USOE, *Faculty and Other Professional Staff* . . . (1966: 12, 13). The 1966-67 estimate of doctorates is that reported by Beazley, instructor and above (USOE, *Numbers and Characteristics of Employers* . . . 1969: 11). All remaining cells in the table were calculated upon the basis of various rates. Replacements were determined through the Rogers study, which shows a replacement rate of 0.02568 over the 1963 to 1969 period. Additions to the staff were scheduled proportional to the increment in full-time staff for those years, as estimated in USOE, *Projections* . . . (1969: 56). The total required is the sum of the replacements and additions. The National Academy of Sciences (1967: 86) reported 45 percent of new doctorates entering teaching during 1964-66; all were assumed entering college and universities, thus providing a slightly larger number of doctorates by perhaps 1 or 2 percent, owing to the small number remaining in elementary and secondary teaching. The last column was obtained by subtraction.

XIII. THE SUPPLY-DEMAND BALANCE

If 50 percent of each doctorate graduating class enter college and university teaching, how much of the demand for doctorates remains to be satisfied by transfers from other employment? By answering this question upon the basis of our assumptions, we may judge whether the pool of nonacademic doctorate-holders will be adequate to fulfill the demand.

Table 9 presents the demand schedule for full-time staff under the three assumed replacement rates. The number of doctorates required depends upon the assumed percent of doctorates on the full-time teaching staff. Three additional assumptions, then, may be made as follows:

1. A continuation of the fall 1966 percent doctorates of 44.1 percent as a constant condition;
2. A gradual increase from 44.1 percent in 1966 to 50 percent in 1975;
3. A gradual increase from 44.1 percent in 1966 to 60 percent doctorates in 1975.

These three additional conditions will now be evaluated under the three assumptions, A, B, and C, previously described.

The numbers of doctorates required under the nine conditions are presented in table 13.

TABLE 13—*Doctorates among Full-time Senior Staff, Required under Three Conditions*

	1. To Maintain 44.1% Doctors in following year			2. To Increase to 50% Doctors by 1975–76			3. To Increase to 60% Doctors by 1975–76		
	Doctorates required for the following year								
	1A	1B	1C	2A	2B	2C	3A	3B	3C
1966-67	8.8	9.8	14.1	9.6	11.8	16.1	14.1	15.2	19.6
1967-68	13.2	14.4	18.8	15.4	16.5	21.9	19.4	20.6	25.4
1968-69	6.6	7.8	12.7	8.8	10.1	15.1	13.1	14.4	19.9
1969-70	8.6	9.9	14.9	11.2	12.6	17.8	15.5	16.9	22.7
1970-71	8.3	9.6	14.8	9.7	11.2	16.7	14.5	16.1	22.3
1971-72	8.9	10.2	15.7	13.4	14.9	20.8	25.6	27.3	34.0
1972-73	11.4	12.8	18.4	15.1	16.6	22.8	21.6	23.4	30.5
1973-74	5.9	7.4	13.3	9.0	10.7	17.3	14.6	16.6	24.4
1974-75	8.1	9.7	15.7	12.1	13.8	20.6	11.1	13.2	21.4

Source and Procedure: The full-time senior staff needed for replacement and expansion, under the three assumptions of replacement rates are shown in table 9. Assumption 1, above, would maintain 44.1 percent doctorates in the full-time senior staff; this is the observed percent of doctorates in fall 1966 (USOE, *Numbers and Characteristics of Employers. . . .*, 1969: 11). In determining the number of doctorates required, it was assumed that those retiring, transferring, etc., would possess the doctorate in the same proportion as the total full-time staff, that is, 44.1 percent.

Assumption 2, above, would increase the percent of doctorates on the full-time staff from 44.1 percent in 1966-67 to 50 percent in 1975-76, the percentage scheduled in equal annual increments. The procedure for determining required doctorates was the same as that used above, except that the percent of doctorates among those annually needed as replacements was assumed to be the same as the percent of doctorates on the staff for each year.

Assumption 3, above, would increase the percent of doctorates to 60 percent by 1975-76. The procedure is the same as Assumption 2, with only the percent of full-time staff with the doctorate being different.

Table 14—*Supply of Doctorate Teachers to Higher Education and the Number of Doctorates Required from All Other Sources to Fill the Demand Under Nine Assumed Conditions*

	Supply of Doctorates from Graduate Schools New Doctorates into Teaching (Assuming 50%)	Doctorates Required from All Other Sources to Fill Doctoral Demand under Various Assumptions								
		1. To maintain 44.1% doctorate staffs the following year			2. To increase to 50% doctors by 1975–76			3. To increase to 60% doctors by 1975–76		
		1A	1B	1C	2A	2B	2C	3A	3B	3C
1966–67	10.3	(1.5)	(0.5)	(3.8)	(0.7)	1.5	5.8	3.8	4.9	9.3
1967–68	11.5	1.7	2.9	7.3	3.9	5.0	10.4	7.9	9.1	[illegible]
1968–69	12.2	(5.6)	(4.4)	0.5	(3.4)	(2.1)	2.9	0.9	2.2	[illegible]
1969–70	13.8	(5.2)	(3.9)	1.1	(2.6)	(1.2)	4.0	1.7	3.1	[illegible]
1970–71	14.7	(6.4)	(5.1)	0.1	(5.0)	(3.5)	2.0	(0.2)	1.4	[illegible]
1971–72	16.2	(7.3)	(6.0)	(0.5)	(2.8)	(1.3)	4.6	9.4	11.1	17.8
1972–73	18.2	(6.8)	(5.4)	0.2	(3.1)	(1.6)	4.6	3.4	5.2	12.3
1973–74	20.0	(14.1)	(12.6)	(6.7)	(11.0)	(9.3)	(2.7)	(5.4)	(3.4)	4.4
1974–75	21.5	(13.4)	(11.8)	(5.8)	(9.4)	(7.7)	(0.9)	(10.4)	(8.3)	(0.1)
1975–76	22.7	—	—	—	—	—	—	—	—	—

Source and Procedure: The percent of each doctoral graduating class entering first postdoctoral employment with a college or university to teach is approximately 50 percent (see table 11). The first column in the above table is one-half of the graduating doctorates, actual and projected. The difference between these available graduates and the demand for college and university teachers, according to the several demand schedules, is presented in the remaining columns. Numbers in parenthesis indicate a "surplus" of graduating doctorates. The "surplus" signifies that the percentage of doctorate-holders on teaching staffs would increase over that assumed in the demand schedule. The "surplus" does not signify that they could not be absorbed into teaching in colleges and universities.

Table 14 presents the supply of newly granted doctorates who may be expected to enter college and university teaching. Subtracting this supply from each of the nine demand schedules provides estimates of the demand to be satisfied through transfer from other employment, from research work, from administration, etc.

Under Assumption 1A and 1B, there appears to be no need to draw upon the nonacademic supply. Under Assumption 1C, small numbers will be required to 1971, and after then the new academic production should adequately meet the demand.

Under Assumption 2A and 2B, also, the academic output is sufficient after 1968. Under Assumption 2C, however, moderate requirements from the nonacademic sector would be annually required to 1973, and thereafter the classes of newly awarded doctorates should prove sufficient to fulfill the demand.

Under Assumption 3A, 3B, and 3C, however, the supply from new graduating classes appears to be less adequate. Assumptions 3A and 3B would require an average annual transfer of 1,200 and 2,800, respectively, from nonacademic to academic employment. In view of the evidence in section XII this objective would appear to be attainable. However, Assumption 3C would require an annual average of 9,100 transfers from nonacademic to academic employment. Unless academic salaries are made extremely attractive in relation to nonacademic salaries, this demand would appear to be at the outside limits of the supply from nonacademic employment.

Figures 2, 3, and 4 present these results graphically, with the demand as well as the supply accumulated annually.

XIV. CONCLUSION

The replacement rate and the aspirational goal for quality of instruction make a real difference in determining the adequacy of the supply relative to demand for full-time senior teaching faculty in higher education.

There is little question that the fall 1966 percentage of doctorates on the teaching staff (44.1 percent) can be maintained. There appears to be fairly convincing evidence that the supply of doctorates is adequate to increase the percentage of full-time senior teaching staff to 50 percent by 1975. This percentage can be reached sooner if the lower replacement rates prevail, but it can be reached by 1975, even under the condition of a 6 percent replacement rate. In fact, under the low and medium replacement rates the supply appears to be sufficient to increase the percentage of doctorate teachers to 60 percent by 1975. There is a serious question that this can be achieved, however, under the condition of the 6 percent replacement rate.

Perhaps the critical element, both in retention of staff and in attracting staff from nonacademic employment, is the relation of teachers' salaries to those available to doctorates elsewhere. One approach to evaluating this is the relationship between the median salary of Ph.D. scientists in colleges and universities and in Federal employment, as shown by the National Register data. If the parity attained in 1968 is maintained or surpassed, one might expect a replacement rate of less than 6 percent to prevail. This would lead to an increase in the quality of staff in higher education, as measured by the percentage of teachers with the doctorate degree.

The National Register of Scientific and Technical Personnel provides one important indicator of the state of the system. Another indicator is available from the annual survey of doctorates on the senior teaching staff, as shown in the *Numbers and Characteristics of Employees in Institutions of Higher Education*. The 1967 and 1969 data from this survey would provide verification of the assumptions, following the procedure set forth in table 12.

A third indicator is available in the National Science Foundation series on science activities of colleges and universities. This provides a basis for determining the percentage of doctorates on the staff for science fields. When the 1966 and 1968 data are released a determination of trends in the percentage of doctorates on science faculties may be made to verify the assumed effect of parity of university salaries with Federal salaries.

Figure 2. Accumulated Demand for New Doctorate Teachers in Higher Education Under an Assumed Constant 44.1 Percent Doctorates on Full-Time Senior Staff, and New Doctorate Supply from Doctorate Graduating Classes.

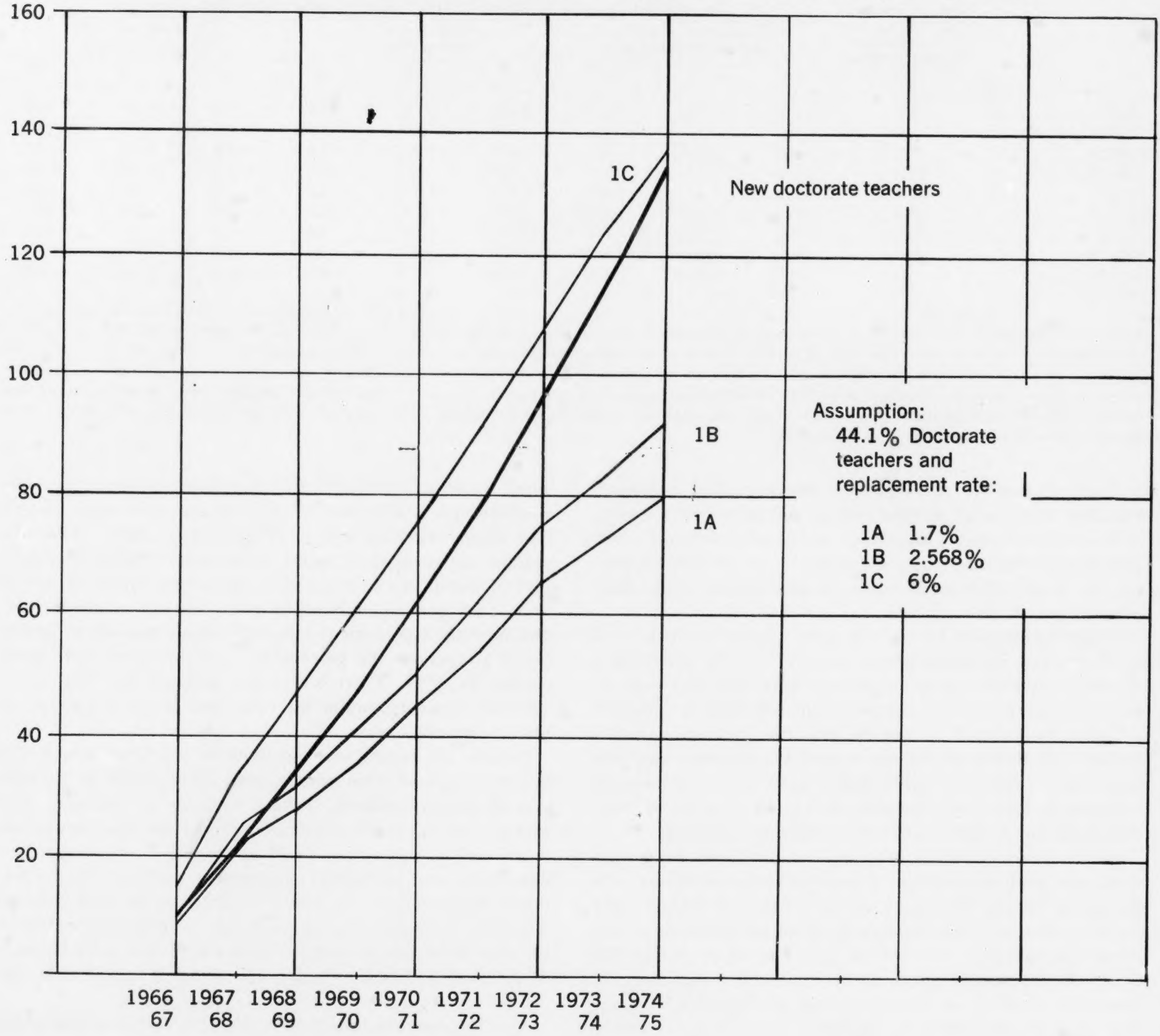


Figure 3. Accumulated Demand for New Doctorate Teachers in Higher Education Under an Assumed Gradual Increase from 44.1 Percent to 50 Percent Doctorates on Full-Time Senior Staff, and New Doctorate Teachers Supply from Doctorate Graduating Classes.

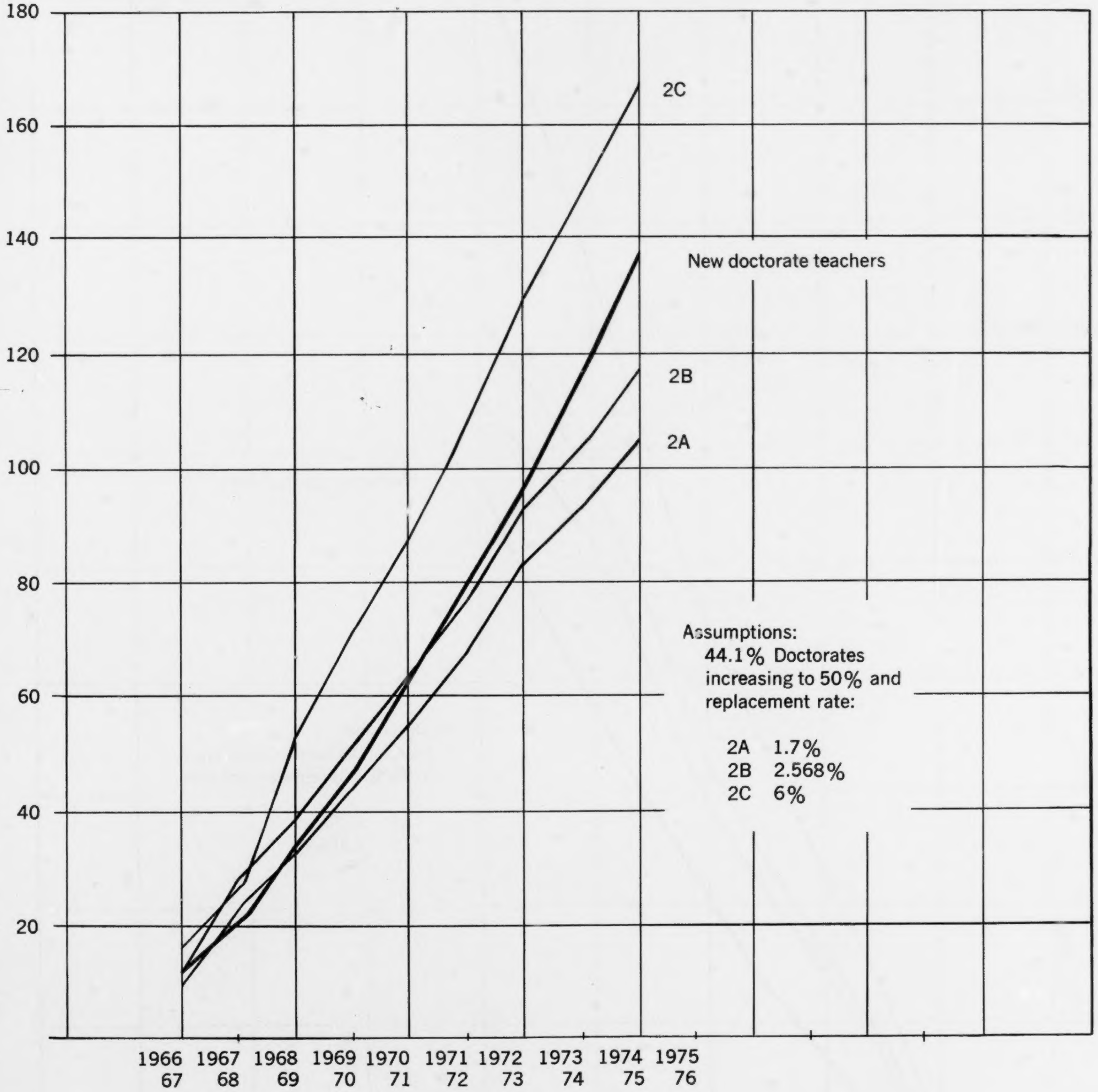
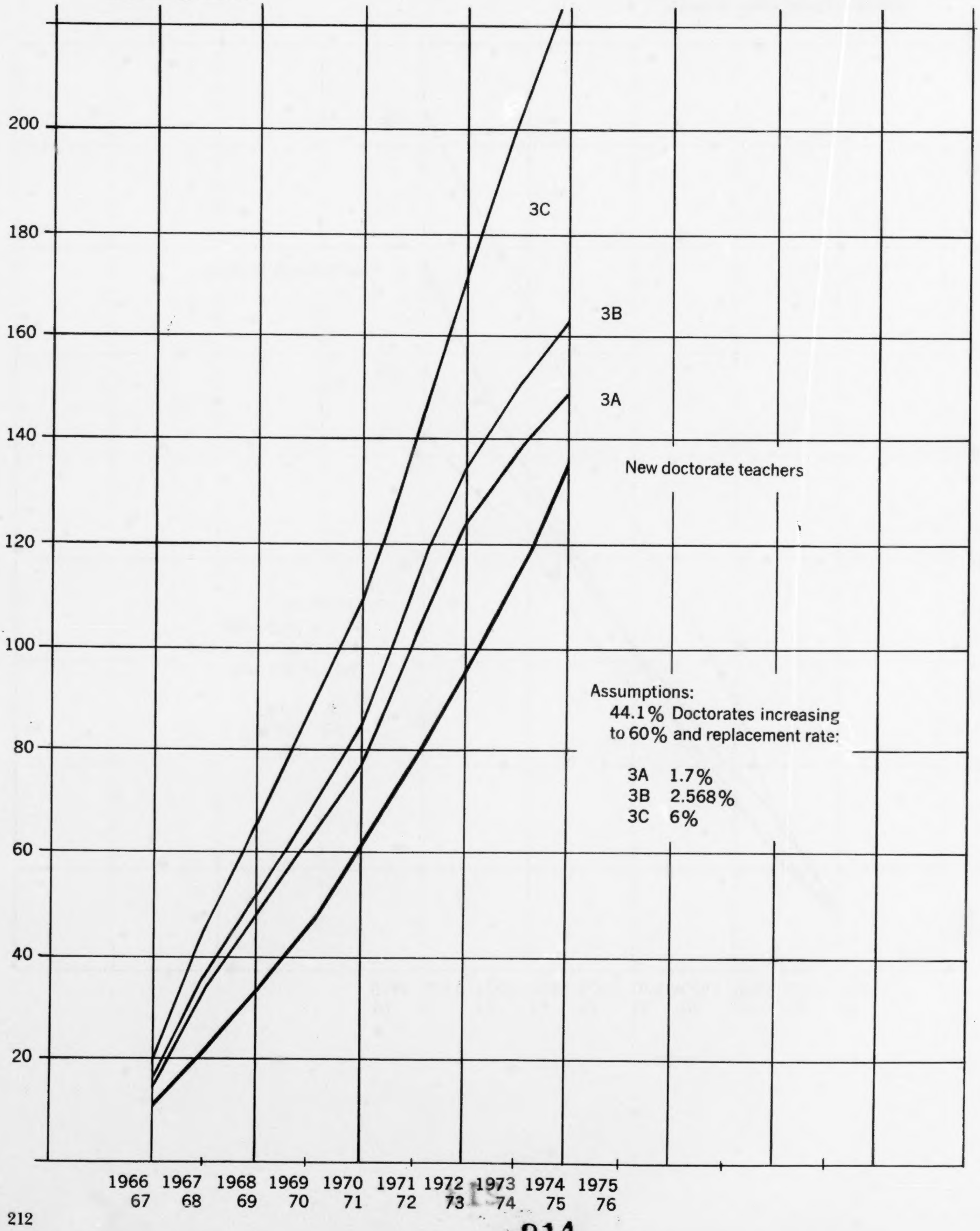


Figure 4. Accumulated Demand for New Doctrate Teachers in Higher Education Under an Assumed Gradual Increase from 44.1 Percent to 60 Percent Doctorates on Full-Time Senior Staff, and New Doctorate Teachers Supply from Doctorate Graduating Classes.



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APPENDIX

The Procedure for Projecting Degrees [35]

Degrees are projected here as a function of population and rates of attainment. While the details of this procedure are given in notes to the tables, the general approach may be outlined as follows:

1. The U.S. Bureau of the Census estimates the population by age and sex as of July 1 of each year, and also projects the population into the future. These estimates for ages 20, 21, 22, 23, 24, and 25 for males and 20, 21, 22, and 23 for females were the population base used to estimate degrees. These ages were chosen because they include the principal part of the baccalaureate graduates, as shown by the data in table A1.

2. The U.S. Bureau of the Census, through its Current Population Survey, obtains enrollment in college by years attended and by age and sex as of October of each year. These data are not always routinely published but were provided by the Census for the fourth year of college.

3. The population enrolled as of October of each year was "aged" 9 months to the age distribution that would exist at the time of graduation in June. It was assumed that the birth month of the fourth year college enrollment by age is the same as that of its original birth cohort. Births by month and year are recorded in *Vital Statistics of the United States, I Natality* and summarized in other publications.[36] A percentage of the

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[35] Computations for projections of degrees were made by William Thomas Ferriss, whose careful attention to the details of the work I wish to acknowledge with appreciation.

[36] Harry M. Rosenberg, *Seasonal Variation of Births, United States, 1933–63.* NCHS Series 21, No. 9. Washington, D.C.: DHEW, National Center for Health Statistics, 1966, pp. 44–45.

population in each age was moved to the next higher age. This provided the age distribution of the graduating seniors for each year, 1962 through 1968 (table A1).[*]

4. Four-year degrees—the procedure used to estimate them is described later, step No. 8—were distributed by age of the senior enrollment (table A2). The percent of seniors of each age was multiplied by the total 4-year degrees to produce an estimate of the 4-year degrees awarded at each age. Since the age range of senior enrollment is much greater than the 20 to 25 years of age used in making the estimates, the "ends" of the age distribution were aggregated and assigned to ages 20 and 25, respectively, for males and 20 and 23 for females. For example, in 1968, to the 20-years-of-age males were attributed approximately 4 percent of the 4-year degrees, some of them having been awarded at younger ages, and to the 25-year age males were attributed approximately 20 percent of the degrees, some of them having been awarded to older ages, up through age 34.

5. Four-year degrees by single year of age and sex were divided by the population (as of July 1) of the respective age-sex category, thus producing a rate of 4-year degree attainment by age and sex for each year, 1962–1968, table A3.

6. Rates of 4-year degree attainment by age and sex were regressed on time, 1962–1967. The regression equation was then used to calculate estimates for each year, 1969 to 1976. The basic assumption affecting the estimates of 4-year degrees, then, is that the annual increment in the percentage of the population by age and sex which attained 4-year degrees during 1962 through 1967 will continue through 1976. The assumption will be negated in the event of an extensive war, that is, one drawing large numbers away from college attendance, and it will be negated if educational resources are less available in relation to the demand than resources have been in the immediate past. See table A3.

7. Estimates of degrees 1969 through 1976 were calculated by multiplying the projected rate of 4-year degree attainment by the projected population in each age and sex category. The resulting projections of degrees are presented in table A5.

8. The procedure for separating degrees according to years required to attain them is described in this paragraph. In 1960, all first level degrees, that is, bachelor's and first professional degrees, were reported in one category. However, during the years 1961 through 1965, first level degrees were separated into those requiring 4 years and those requiring 5 or more years. Then, for the years 1966 and 1967 degrees requiring 4 and 5 years were reported together and those first professional degrees requiring 6 or more years were reported separately. In 1968, a separate report also was made for the first professional degrees requiring 6 or more years.

These combinations of reports make it possible to identify the fields in which degrees are awarded for 5 years and for 6 or more years of study. To separate degrees by year, it is only necessary to assume that the proportion of degrees by field in the 4- 5- and 6-year categories are relatively stable over time. Except for a few instances, which appear to be reporting errors, degrees by field by year appear to fall into fairly consistent patterns, so that each field may be separated into 4- 5- and 6-year categories.

Twenty-eight specialties were subdivided in this manner. They were: architecture, business and commerce general, accounting, business and commerce not elsewhere classified, education, engineering, chiropody, dentistry, hospital administration, medicine, nursing, occupational therapy, optometry, osteopathy, pharmacy, public health, veterinary medicine, health professions other, law, library science, religious education and bible, theology, religion all other, international relations, industrial relations, public administration, social work, and sacred music. There was also a small residual of other fields.

Table A4 illustrates the method used to derive estimates of degrees by year. The information contained in the 1965 and 1966 percentage distributions is combined. For example, 7.61 percent (1966, for 6-year degrees) is subtracted from 74.92 percent (1965, 5 and 6 years) for the estimate of 67.31 percent (5 years).

In practice the aggregate containing the 2 years was separated into two parts, and the information used was based upon the most recent applicable year. For years 1962–1968, approximately 13 percent of degrees granted to males were estimated and approximately 3 percent of degrees granted to females were estimated. The separation of the 4- and 5-year combination in 1966 and 1967 involved larger percentages of degrees.

9. Total 4-year degrees, projected as described in the preceding paragraphs 6 and 7, were distributed by field according to the trends in the percentage distribution of the fields. For each major subject matter area 4-year degrees were expressed as a percentage of total 4-year degrees for each sex. The series for each field was then expressed as a linear regression on time, using the base period 1960 to 1968, except for four series which appeared to be curvilinear. In the latter cases, 2 or 3 years were removed from the series to obtain linearity. The regression on time was then projected forward, 1969 through 1976. To eliminate the disjunction between the last observed year (1968) and the first projected year (1969), a constant was added to some series, thus effecting a smoother sequence.

To force the resulting percentages to add to 100.0 percent, each projected percentage was multiplied by a constant, c, such that, $100.0 = c \Sigma p_i$, where $c = 1 / \Sigma p_i$, and p represents the percentages derived from the regression. The product of these adjusted percentages and the estimated total 4-year degrees provided 4-year degrees by field and sex. Table A5 presents the 4-year degrees by field and sex, projected to 1976.

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[*] A statistician with the U.S. Office of Education in a letter (November 19, 1969) to the author has made the following comment on this method: "This method would be an ideal one if degree data were available by age of graduates; however, the age distribution of college seniors in October is estimated by Census, and it is assumed that graduates will have the same distribution after being aged 9 months. Census data indicate that the younger age groups tend to be full-time students while the older ages tend to be part-time students. Therefore, a greater percentage of the college seniors age 21 in October could tend to graduate the following June than those age 24. (The percentage of those 20 and 21 years of age who are full-time students is about two and one-half times as large as those 25 to 29 years of age.) I believe that the inaccuracies involved in making estimates of graduates by age outweigh any improvements in the projections of degrees obtained by this method. The estimates in table A3 fluctuate widely, especially for men, and do not seem to indicate definite trends. This is probably due to the errors involved in making estimates of graduates by age."

With respect to the last comment, some of it also may be due to errors in the Census Bureau estimates of single age population by sex; see Ferriss, 1969, pp. 269–275. The comment continues:

"Also, aggregating the tails of the age distribution and assigning them to the specific age on each end of the distribution distorts the distribution, especially when an unusually large or small population cohort is the age at one end of the distribution."

10. Five-year degrees were expressed as a percentage of 4-year degrees one year earlier. The projection to 1976 was based upon the regression of this percentage on time. The same procedure was used to project master's degrees, with a 2-year time lag. Similarly, the projection of 6-year degrees was based upon 4-year degrees with a 2-year time lag. A 6-year time lag was used for projecting doctor's degrees. In each instance, the projections were developed separately by sex.

11. The 5-year degrees in social work and library science presented a special problem because of the change in the rules for reporting the degrees. The estimate of 5-year degrees was pooled with the master's degrees for these fields and the regression of their rate of attainment on time, with a 1-year lag, was developed by sex.

12. In projecting master's degrees by sex, one-half the annual increment (b) was employed. This appeared more appropriate in view of the rapid increase in master's degrees in relation to the 4-year bachelor's degrees 2 years earlier. Similarly, in projecting doctor's degrees by sex, one-half the increment (b) in the rate, as determined by observations over the past 6 years, was used in the equation to predict degrees to 1976. The consequence of this adjustment was to reduce the 1976 projection from the observed trend by 3,500 doctor's degrees.[37]

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[37] The statistician with the U.S. Office of Education, previously mentioned, commented upon this procedure, as follows: "Unless there is some reason to believe that master's and doctor's degrees will not continue to increase as they have in the past, I see no reason for arbitrarily halving b (annual increment). If there is some reason for this trend not to continue, it should be stated, and various nonlinear trends should be looked at, such as log curves or log curves with asymptotes."

TABLE A1—*College Seniors by Age and Sex, Estimated, 1962-69*

(Thousands)

	Total	Age: Less than 20	21	22	23	24	25 and over
Male							
June							
1962	326	12	63	95	42	29	85
1963	390	11	68	124	71	30	86
1964	379	12	71	121	47	42	86
1965	424	10	76	149	51	39	99
1966	524	24	81	148	95	38	137
1967	528	21	91	165	89	39	123
1968	563	20	116	164	88	39	136
1969	662	26	132	255	80	38	130
Female							
1962	182	14	60	59	14	12	23
1063	163	13	59	62	9	8	12
1964	272	18	86	107	29	9	23
1965	255	13	79	121	19	10	13
1966	279	20	76	104	35	16	29
1967	303	23	85	121	26	13	36
1968	346	26	107	118	30	15	50
1969	439	19	109	186	44	21	60

Source and Procedure: The U.S. Bureau of the Census provided the fourth year college enrollment by single year of age and sex for October preceding the year shown. Enrollment estimates come from the October Current Population Survey and are published in School Enrollment for each year in the P-20 series, *Current Population Estimates.* Enrollment by age was aged nine months, using the births by month and year, as published in *Vital Statistics of the United States, Natality.*

TABLE A2—*Four-Year College Degrees Awarded by Age and Sex, Estimated, 1962-68*

(in thousands)

	Total	Age: Less than 20	21	22	23	24	25 and over
Male							
June							
1962	228,401	8,407	44,136	66,569	29,424	20,309	59,556
1963	239,083	6,743	41,700	76,012	43,518	18,387	52,723
1964	263,095	8,341	49,283	83,988	32,627	29,154	59,702
1965	279,722	6,603	50,136	98,286	33,657	25,740	65,300
1966	289,875	13,452	44,703	81,985	52,878	21,018	75,839
1967	312,153	12,639	53,737	97,547	52,364	23,218	72,648
1968	346,746	12,316	71,603	100,868	53,884	23,957	84,051
Female							
1962	154,362	11,872	50,883	50,049	11,872	10,173	19,513
1963	171,331	13,671	62,015	65,168	9,456	8,412	12,609
1964	197,326	13,064	62,381	77,616	21,037	6,532	16,696
1965	213,230	10,874	66,052	101,188	15,884	8,358	10,874
1966	220,906	15,754	60,253	82,348	27,398	12,506	22,647
1967	235,935	17,591	66,214	93,992	20,303	9,880	27,778
1968	274,655	20,638	84,758	93,904	23,972	11,906	39,440

Procedure: The percentage distribution of graduating seniors by age and sex, table 1, were applied to total 4-year degrees by sex, to produce the estimates shown in the above table. Detail may not add to totals because of rounding.

Table A3—*Rates of 4-Year Degree Attainment by Age and Sex, 1962 through 1967, and Projected, 1968 Through 1976*

	Age					
	20	21	22	23	24	25
Male						
1962	.006345	.036266	.057786	.025856	.018052	.054489
1963	.004526	.031424	.062356	.037711	.016115	.046740
1964	.005928	.033032	.063196	.026700	.025220	.052233
1965	.004660	.035532	.065655	.025230	.020995	.056293
1966	.009540	.031459	.057940	.035252	.015720	.061658
1967	.006628	.038030	.068502	.036928	.015448	.054174
Projected						
1968	.007780	.03591	.06660	.03540	.01660	.05910
1969	.008216	.03637	.06776	.03656	.01606	.06050
1970	.008654	.03683	.06894	.03774	.01551	.06190
1971	.009090	.03729	.07010	.03890	.01497	.06330
1972	.009528	.03775	.07128	.04008	.01443	.06470
1973	.009964	.03821	.07244	.04124	.01388	.06610
1974	.010400	.03867	.07362	.04242	.01334	.06750
1975	.010840	.03913	.07478	.04358	.01280	.06890
1976	.011280	.03959	.07596	.04476	.01226	.07030
Female						
1962	.009139	.042367	.043483	.036232		
1963	.009332	.047521	.053947	.026319		
1964	.009446	.042378	.059158	.036432		
1965	.007840	.047554	.058463	.026623		
1966	.011416	.043254	.059031	.042122		
1967	.009488	.047773	.067185	.041371		
Projected						
1968	.01009	.04727	.07240	.04107		
1969	.01028	.04787	.07637	.04290		
1970	.01047	.04847	.08034	.04473		
1971	.01061	.04907	.08431	.04656		
1972	.01085	.04967	.08828	.04838		
1973	.01104	.05027	.09225	.05021		
1974	.01124	.05087	.09622	.05204		
1975	.01143	.05147	.10020	.05387		
1976	.01162	.05207	.10420	.05570		

Procedure: The rate of degree attainment, Y, equals a plus bX, where X equals 1 (1962), 2 (1963) . . . Values for a and b were calculated using the least squares method on the years 1962 through 1967.

TABLE A4—*Illustration of Method Used to Infer Degrees by Year, Architecture, Males*

		Years				
	Total	4	5	4, 5	5, 6	6
A. *Degrees Reported*						
1965	2,225	558			1,667	
1966	2,496			2,306		190
B. *Percent of Total*						
1965	100.0	25.08			74.92	
1966	100.0			92.39		7.61
C. *Assumed Distributions*						
1965 and 1966	100.0	25.08	67.31			7.61
1965			90.0		100.0	10.0
1966		27.0	73.0	100.0		
D. *Estimate*						
1965	2,225	558	1,498			169
1966	2,496	623	1,683			190

Procedure: The A section of the table comes from the USOE *Earned Degree Conferred* reports. The B section is the percentage distribution of the data in the A section. The C section shows the combination of the two distributions (1965 and 1966) and the percentages used to split the two combined years (5 and 6 in 1965, and 4 and 5 in 1966). The D section shows the distribution of degrees resulting from the application of the percentages in section C.

TABLE A5—*Estimates and Projections of Earned Degrees, 1960 to 1968, Actual, and 1969 to 1976, Projected*

Academic Year	4-Year (000)	5-Year (000)	Mixed 5-Year and Master's (000)	Master's (000)	6-Year (000)	Doctor's (000)
1959–60	357.8	7.2	4.1	74.0	26.3	9.8
1960–61	365.3	6.9	4.1	77.7	26.0	10.6
1961–62	382.8	7.6	4.4	84.1	26.4	11.6
1962–63	410.4	8.5	4.9	90.6	27.5	12.8
1963–64	460.5	9.2	5.6	100.0	28.0	14.5
1964–65	493.0	13.9	4.1	110.9	29.2	16.5
1965–66	509.1	15.0	7.8	132.9	31.5	18.2
1966–67	548.1	14.3	8.7	149.2	32.5	20.6
1967–68	621.4	15.5	10.0	167.2	34.7	23.1
1968–69	670.6	18.2	11.6	184.8	36.7	24.3
1969–70	717.5	20.6	13.3	213.8	40.4	27.6
1970–71	734.5	22.9	14.8	236.8	42.7	29.5
1971–72	786.1	24.6	15.8	257.2	44.4	32.3
1972–73	812.2	28.0	17.3	269.5	45.1	36.4
1973–74	851.7	29.9	18.8	296.4	48.7	39.9
1974–75	893.6	32.5	20.5	312.0	49.0	43.1
1975–76	937.4	35.3	22.4	333.4	50.2	45.3

Source: USOE *Earned Degrees Conferred* series was used as the basis for estimating degrees by years of study required; after 1969 projected. See accompanying description of procedures.

Note: The 1975-76 projection may be compared with others, as follows: O.E., 1967: 36.9; O.E., 1969: 40.6; Cartter-Farrell, 39.1 (Carter and Farrell, 1969: 361)

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Faculty Resources for Universal Higher Education

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I. INTRODUCTION

New times and new students require new educational programs, even new institutions. Will they also require new teachers? Obviously, many more college teachers will be necessary. There is also reason to believe that we will need teachers with different interests; different attitudes toward students and their education; a more thorough knowledge of the interests, potential abilities, and cultural backgrounds of students; and more effective preparation for a wide range of teaching activities. Consider, first of all, the new students. Whom will we teach?

II. THE "NEW" STUDENTS

Academic Ability

There has been a dramatic increase in the proportion of high ability students who go to college. Table 1 compares the proportion of high school graduates at various levels of ability who entered college in 1953 and 1960. Over this 7-year period, the percentage of high school graduates in the top quarter in ability who went on to college increased from 48 to 80. The percentage in the second quarter grew from 38 to 54. However, there was practically no change in college-going among high school graduates in the lower half in ability.

During the decade 1960–1970, the proportion of students in the upper half who went on to college probably increased still more. It is apparent, therefore, that the new student will come predominantly from the second, and particularly the third and lowest quartiles in academic ability.

Table 1—*Ability levels of students entering college, 1953 and 1960 (in percentages)*

Ability levels	Wolfle 1953	Talent 1960
Lowest quarter	20%	19%
Third quarter	32	32
Second quarter	38	54
Top quarter	48	80

Source: K. P. Cross, *The Junior College Student: A Research Description.* Princeton, N. J.: Educational Testing Service, 1968.

In a sense, of course, students from the second, third, and fourth quartiles of ability are not really new students. Many institutions will simply have many more of these high school graduates. However, the sheer number of students in the lower half of the ability distribution will force institutions to adapt their educational processes more effectively than in the past to the characteristics of these students.

Many institutions, particularly 4-year colleges and universities, have considered students of lesser academic ability to be expendable.[1] The time is approaching, however, when these institutions will be under strong social pressure not to wash them out, but to offer them appropriate kinds of education. Sanford expressed this obligation as follows:

> We have to take our young people as they are. It is clear that large numbers of them are not 'qualified,' owing largely to deprivations of the past, to enter existing programs of education, that they are not in a good position to 'benefit' from these programs. It is our task, then, to create programs and institutions that they *can* benefit from. Education in our society today is a right.[2]

In looking at the flow of high school graduates to college, one finds a hierarchy of institutions arranged according to the average ability of their entering classes. An early study of the diverse student bodies of American higher education showed, for example, that the range of *mean* freshman scholastic aptitude scores among institutions in a national sample was about as great as the range within which fell three-fourths of the *individual* freshman scores in the entire sample. It is this range in academic ability among the student bodies of colleges and universities that provides an open door to the graduates of American high schools. Among the more than 2,000 institutions, ". . . a man who gets rejected by one set of gatekeepers has a pretty good chance of finding another set who will let him by."[3]

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[1] It should be noted that there is only a modest correlation between general academic aptitude test scores and college achievement or persistence. Not a few students in the broad middle range of aptitude will succeed. It should also be noted that the relationship between academic aptitude scores and various aspects of creativity is relatively low. For example, students with mediocre general aptitude test scores may prove to have considerable artistic talent.

[2] Nevitt Sanford, "Implications for Education and for Adjustment of Curricula to Individual Students," pp. 40–64 in E. J. McGrath, ed. *Universal Higher Education.* New York: McGraw-Hill, 1966.

[3] Christopher Jencks, "Social Stratification and Higher Education," *Harvard Educational Review,* Vol. 38, Spring 1968, pp. 277–316.

It should not be assumed, however, that because institutions may be scaled by the average academic ability of their entering students, they all have essentially homogeneous freshman classes. Some institutions do select from a relatively narrow range of ability. For example, the University of California, except for certain programs for disadvantaged students, selects its freshmen from the highest eighth of high school graduates.

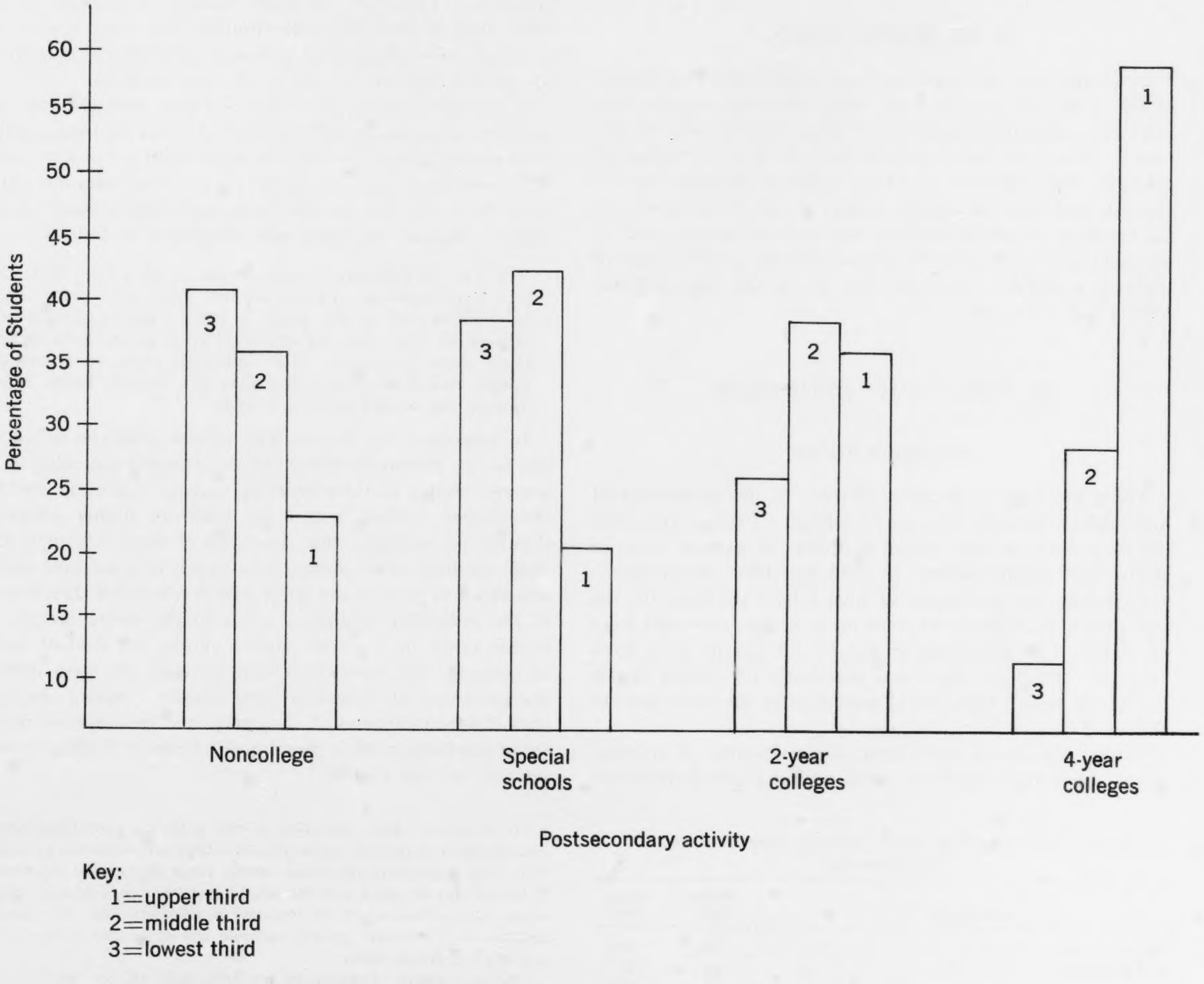
Many, perhaps most, institutions, however, are much more heterogeneous. In the national study of flow from school to college referred to above, the most selective and the least selective institutions admitted students with fairly wide and comparable ranges of scholastic aptitude test scores; both institutions had a difficult problem of adaptation to individual differences.

Intellectual Predisposition

Diversity in academic ability, as expressed in academic aptitude test scores or high school achievement, is not the only aspect of heterogeneity which teachers need to take into account. Students also vary enormously, both among and within institutions, in interests and motivations, social and cultural backgrounds, and career expectations. Many of the "new students" will have a limited motivation for formal "academic" education, will show little interest in ideas, and will be conventional and dependent rather than flexible and autonomous in their thinking.

A scale of "Intellectual Predisposition," weighted heavily with such attributes as interest in intellectual and cultural pursuits, openness to new ideas, and independence of thought,

Figure 1. Percentages of Various Groups of Students Scoring in Each Third on the Intellectual Predisposition Scale.



Source: K. P. Cross, "Student Values Revisited", *Research Reporter*, Vol. III, No. 1, 1968. Berkeley: Center for Research and Development in Higher Education, University of California.

has been devised to measure the intellectuality of college students. A recent study showed that 59 percent of the students who entered 4-year colleges were in the top third on this Intellectual Predisposition Scale. Only 36 percent of those who went to junior colleges scored at the same level. The distribution in three types of institutions and among students who did not go on to college is shown in figure 1.

Some institutions attract a large number of students who are intrinsically interested in ideas, who are motivated toward high academic achievement, and who can pursue their education with a high degree of self-direction. Other institutions draw heavily from the pool of students characterized by pragmatic rather than intellectual interests and goals. Many institutions draw student bodies even more diverse in these respects than in conventional measures of academic aptitude. For example, in one highly selective college studied, more than half the students were in the highest third on the Intellectual Predisposition Scale, while in an "open door college" only 5 percent were at that level. The study noted that students who differ substantially in intellectual predisposition may be expected to respond differently to curricular emphases and teaching styles.[4]

Vocational Motivation

The primary goal of many, probably most, students now in college is to prepare for a vocation. This is especially true of a large proportion of junior college students. It has been shown that they have a more practical orientation to college and to life than students in 4-year institutions, that they are interested mainly in applied curriculums, and that they believe their future satisfactions will come from business and financial success.[5]

Nevertheless, a national study by Trent and Medsker of high school graduates has shown that those who had vocational plans ". . . turned out to have made unrealistic appraisals of their ability, the requisite training for vocations for which they were attracted, and the availability of the kinds of jobs they had in mind." [6] These deficiencies pose difficult and important problems of educational and vocational guidance.

Generally speaking, students whose primary motivation for going to college is vocational have relatively low scores, i.e., in a pragmatic direction, on the Intellectual Predisposition Scale. Figure 1 shows that nearly 40 percent of the students who entered special schools of secretarial training, electronics, and so forth, were from the lower third of high school graduates on the Intellectual Predisposition Scale, and more than 40 percent were from the second third. These are even greater proportions than in the case of the 2-year colleges. However, such students are not unknown in 4-year institutions. According to a study by Cross, between 10 and 15 percent of these schools were from the lowest third and more than 25 percent from the second category.[7] There is no reason to believe that the new students will be any less motivated vocationally than today's high school graduates.

Cultural Background

Many of the new students will come from limited social and cultural backgrounds. The Trent and Medsker study noted that three out of every four students from professional families entered college, compared with but one in four from homes of semiskilled and unskilled workers. Among graduates with fathers in professional or managerial occupations, nearly 60 percent who were in the lowest 40 percent of the ability distribution went to college; whereas, among the graduates whose fathers were in semiskilled and unskilled occupations, only about 40 percent who were in the upper 40 percent of the ability distribution matriculated.[8]

Those from low socioeconomic levels who do go to college may be seriously handicapped by the cultural limitations of their homes, although those who surmount social and economic handicaps may be students who have sought out books, attended lectures, visited museums, and exchanged ideas with their intellectual peers. In any event, the new students will come predominantly from culturally limited home and community backgrounds.

Students from severely disadvantaged homes may be especially handicapped by poverty of ideas, limitations of language, paucity of educational and vocational models, and lack of parental encouragement. The simple fact is that we have not yet succeeded in offsetting to any great degree the depressive effects of cultural and educational impoverishment on either educational motivation or achievement. Added to these deprivations in many cases is emotional resentment against the people and the conditions which the disadvantaged conceive to be responsible for their situation. Special efforts will be necessary to reach the disadvantaged. As Clark Kerr put it in his Lowell Lecture on April 1, 1968:

> These people are separated from the world of learning by barriers of geographic distance, cost, earlier school preparation, motivation, sometimes even the most basic lack of familiarity with the advantages of a college education. We cannot wait for them to come to us. It is now time—and past time—for us to go to them, for our sake as much as for theirs.

Kerr then went on to quote this eloquent comment by then U.S. Commissioner of Education Harold Howe II:

> Think what could happen in this country if 70 percent of the youngsters from our most disadvantaged neighborhoods went to college. What a revolution! For our middle-class youngsters, college is, by and large, more of the same. For ghetto youngsters it is a dramatic change, the discovery of the possible—not a plateau but a peak, not a view but a vista. Symbolically (if not always actually) college is for them the elimination of restrictions on opportunity, the opening at the end of the tunnel of generations.[9]

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[4] K. P. Cross, *The Junior College Student: A Research Description*. Princeton, New Jersey: Educational Testing Service, 1968, pp. 29–30.

[5] *Ibid*, p. 51.

[6] J. W. Trent and L. L. Medsker, *Beyond High School*. San Francisco: Jossey-Bass, 1968, p. 23.

[7] K. P. Cross, "Student Values Revisited," *The Research Reporter III*, No. 1, 1968, Center for Research and Development in Higher Education, University of California, Berkeley.

[8] J. W. Trent and L. L. Medsker, *op. cit.*, p. 25.

[9] Clark Kerr, "Higher Education in the Troubled City," Lowell Lecture Series, April 1, 1968 (mimeographed).

All these are the new students, students from the lower half. What kinds of faculty can cope with the range of characteristics, potentialities, and deprivations which these students exemplify?

III. FACULTY BACKGROUNDS AND ATTITUDES

It has been said that campuses are often more unprepared for the disadvantaged student than the student is unprepared for the campus, and consequently, that colleges and universities ask disadvantaged students to change in far greater degree than educators have been willing to change their institutions. Colleges and universities are not only unprepared for the especially disadvantaged and deprived students, but they are also ill-adapted in many ways to the education of students in the "lower half" of academic ability, cultural background, and vocational aspirations.

Socioeconomic Background

The unreadiness of institutions to cope with the characteristics and needs of highly diverse student bodies is due in no small part to the backgrounds, attitudes, and aspirations of college and university faculty members. One would expect that college teachers' educational philosophies and their understanding of students would be related, in some degree at least, to their own socioeconomic backgrounds. In eight diverse colleges and universities studied by Parsons and Platt, the fathers' occupations of nearly two-thirds of the faculty members were in executive, professional, and entrepreneurial fields.[10] Only a quarter had fathers in unskilled and skilled occupations. The institutions in the study were grouped by level of internal differentiation. The highly differentiated ones included a relatively large number of independent operative units perceived as autonomous from each other by faculty members. (There was a positive relationship between degree of differentiation and quality as measured by conventional academic standards.) In the highly differentiated schools, 26 percent of the faculty who had entered the academic profession before World War II were from the families of executives and professionals, but 36 percent of those who had entered the profession within the last 10 years came from the same background. In the medium level schools, however, the percentage of faculty whose fathers were in executive or professional classes dropped from 35 to 24. Thus, teachers from labor class backgrounds comprised a reduced proportion of the faculties at the highly differentiated institutions, but an increased proportion at the medium level schools. Even in the latter, however, only 26 percent of the faculty came from the unskilled and skilled categories.

Two of the institutions in question were urban universities which were relatively unselective, which attracted many part-time students, and which had a strong vocational orientation. This is the kind of institution which a large proportion of the "new students" will attend. Unless the faculty "mix" in these institutions changes greatly, the students will be taught by faculty members most of whom have lacked any significant contact with their students' social and cultural backgrounds. They will be particularly ignorant of the communities, the homes, the attitudes, and the aspirations of the ethnic minorities. They will have had limited experience in the vocational world which many students will enter—the technical and semiprofessional occupations, the skilled trades, the crafts and the service industries. Consequently, they will find it difficult to relate formal learning to the experiences and problems of the lower socioeconomic classes and of ethnic minorities. They may be inept in relating general education to vocational studies, a relationship which must be explored if students whose interests are primarily vocational are to secure a broader educational experience which will enrich their personal lives and enable them to contribute to the regeneration of the cities.

Faculty Friendship Patterns

The continuing isolation of faculty members from the working class, or for that matter, from other social and economic groups, is reflected in their friendship patterns.

According to the study of faculty members by Parsons and Platt, 53 percent of the teachers in highly differentiated institutions reported that they had only academic friends; friends only among academics and professionals comprised the associations of 80 percent. In schools with a medium level of internal differentiation, only 15 percent of the faculty members had friends primarily in white-collar and blue-collar occupations, and nearly 70 percent confined their friendships to academics and professionals.[11]

Thus, faculty members in most institutions live segregated lives so far as their contacts with the society at large are concerned. Such segregation may be expected to color their social and cultural attitudes and make it difficult for them to establish close personal relationships with their students. The term "effective scope" was invented some years ago to characterize the extent and richness of people's meaningful worlds. "What we call the effective scope of a man's world," it was said, "characterizes . . . what he perceives, what he has contact with, and what he reaches for through his interest or his expectations." [12] The term "effective scope" may be applied to the breadth and differentiation of educational opportunities. It may be applied to the interests, cultural backgrounds, and aspirations of students. And it may be applied, as well, to the range of faculty members' experiences and associations with individuals and groups from all levels and classes of the larger society. Although we have few data on the extent of faculty members' differentiated perception of the world and the people who live in it, we may infer that the particular backgrounds from which they come and the persons with whom they associate have given many of them a limited "effective scope" on which to judge the relevance of postsecondary education to the great band of students to be served, and a limited experimental base on which to build a truly universal higher education. The social origins and social orbits of the great majority of these college and university teachers, and the images of institutional prestige widely held by the profession, support elitist attitudes toward students, institutions, and kinds of educational programs.

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[10] Talcott Parsons and G. M. Platt, *The American Academic Profession: A Pilot Study*, March 1968 (mimeographed).

[11] *Ibid.*

[12] P. F. Lazarsfeld and W. Thielens, Jr., *The Academic Mind*. Glencoe, Illinois: The Free Press, 1958, p. 264.

Attitudes of Junior College Faculties

More than any other one institution, the community junior college exemplifies the American commitment to universal higher education. It offers a variety of academic and vocational programs. It enrolls full-time and part-time students. It provides an opportunity for students to make up educational deficiencies. Its doors are usually open to all high school graduates and often to adults who have never completed high school. It emphasizes student counseling. It serves its community in many ways. Nevertheless, the faculty members of these institutions by no means unanimously approve all these functions.

In a recent national survey of junior colleges conducted at the Center for Research and Development in Higher Education at Berkeley, faculty members were asked to say whether they felt certain types of educational programs were "essential," "optional" or "inappropriate" for the junior college generally.[13]

Most of the respondents considered it *essential* for the college to offer specialized education to prepare students for technological, health, business and related occupations. However, only half the faculty members deemed it *essential* to offer specialized education for skilled and semiskilled workers in building trades, auto mechanics, and business. This is significant, for if 2-year colleges are to admit high school graduates over virtually the full range of general academic aptitude, some students presumably will find their vocational outlets in these occupations. Approximately one-fifth of the respondents indicated that specialized programs of less than 2 years duration were *essential*, and a fourth of them considered such programs *inappropriate*.

Data were available for 57 well-established junior colleges and two new ones. That some change in faculty attitudes has taken place is suggested by the fact that whereas only about half of the faculty in the older institutions considered remedial courses for junior college entrants with deficient academic records *essential*, two-thirds of those in the two new institutions so considered them. On another item, however, liberalized attitudes were not so apparent. In spite of the fact that many of the institutions would have considered themselves to be *community* colleges, only 17 percent of the respondents indicated that college staff and students should actively participate in community studies, and 20 percent believed that such participation would be inappropriate.

No doubt that attitudes of junior college faculty members toward a wide range of students and programs would be more favorable than those of faculty members in 4-year institutions. Nevertheless, many junior college teachers aspire to positions in institutions which carry greater social and educational prestige. Some 44 percent of the faculty members in the established junior colleges said they would prefer to teach in a 4-year college or university, and a still greater proportion, 57 percent of those in the two new institutions expressed this desire.

The source of junior college faculty members may be changing. Before assuming their present positions, 33 percent of the staff of the 57 established junior colleges had experience in elementary or secondary schools. In the two new institutions, however, only 22 percent had come from elementary or secondary schools. In the older institutions, more than a third of the faculty had come directly from graduate schools or 4-year colleges and universities. In the two new institutions, 41 percent had come from these two sources. While data from two new institutions are not sufficient to establish a trend, it seems probable that, in the future, junior colleges will recruit a smaller proportion of their faculties from the lower schools. As more and more teachers go directly to junior colleges from the graduate schools, and as these institutions become firmly established as parts of the system of higher education rather than traditionally as extensions of the secondary school, the attitudes of the staff may change. Some of the less academic values, functions, and programs of the junior colleges may become increasingly precarious. This suggests—and in fact many other factors which cannot be discussed here also indicate—that if the community college becomes less hospitable to students of low or medium academic ability and to vocational curriculums, especially at the skill or craft level, other institutions will be established to assure widespread postsecondary education.

The "Pecking Order"

The constant threat to universal higher education, which requires highly diversified educational institutions and educational programs, is the tendency to emulate prestigious colleges and universities. It has often been said that many institutions would prefer to be pale reflections of prestigious models than ones effectively accomplishing different and perhaps more limited objectives. The same presumably is true of faculty members. Parsons and Platt have observed that institutional prestige is highly correlated with high salaries, light teaching loads and opportunity to do research. Certain faculty associations in the California State College system, for example, are pressing for a 9-hour teaching load for undergraduate courses and a 6-hour load for graduate teaching, salaries comparable to those in the University of California, and funds and released time for research. There probably is no such real yearning for research, since studies have shown that 85 percent of those who earn the doctorate never publish. But the high image of the academic man is the one who secures large research grants, directs a bevy of research assistants, enjoys a large travel account, reads papers at professional meetings, and publishes articles in scholarly journals.

Faculty members seem always to be looking for the escalator. The junior college teacher wants to move to a 4-year institution. The undergraduate teacher wants to teach graduate students. The teacher thinks he wants to become a researcher. And both in myth and in truth, the researcher has reached the pinnacle of prestige and, more often than not, the peak of salary, although his published research may be relatively routine and unimaginative.

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[13] This study was directed by L. L. Medsker.

Furthermore, prestige is attached to a certain kind of research. It should be "pure" rather than applied. It should take place in the university, not in the community. Kerr observed recently that "There is a strange conviction prevalent among some faculty members that work on local city problems is of lower quality than work on problems of the Nation or of some other part of the world." [14]

New Rewards Needed

The great need in universal higher education is for teachers —teachers who can teach effectively, and teachers who can adapt their methods and their courses to a wide range of student interests, abilities and careers. But teachers committed to teaching will be in short supply until educational institutions revise their systems of sanctions and rewards. It has been properly asserted that the status of faculty members committed primarily to teaching ". . . must be at least equal to that of faculty who are interested primarily in research, and this equal status must be reinforced by the only means that is effective in American society—equal, if not superior, pay." [15]

It should be remembered that the profession itself largely determines the sanctions for faculty service in colleges and universities. The standards vary from institution to institution. In institutions which are "on the make," "scholarly publication" is likely to be the necessary qualification for appointment and advancement. In certain major universities, research is valued far above teaching. At the University of California at Berkeley, for example, it is almost impossible to secure tenure and advancement in rank or salary without a record of scholarly publication. In that institution, the number of faculty members who have been advanced on evidence of distinguished teaching in lieu of scholarly publication could probably be counted on the fingers of one hand over a 10-year period. In many institutions it will take strong pressure from students, administrators, and even governing boards to restore teaching as a career and excellence in teaching not only as qualification for advancement, but for the highest remuneration.

In a recent study of faculty incentive systems, faculty members at six diverse colleges and universities were asked to appraise criteria for promotion and salary increases. In the total sample, 92 percent said that "effectiveness as a teacher" *should be* either "quite" or "very important." A total of 63 percent said that research and scholarly activity *should be* quite or very important. At five of the schools, the faculty indicated that teaching *should be* more important than research. At the State university, it was said that research *should be* about equal with teaching in importance.

However, when asked how important they thought each of the criteria *actually* was in their institutions, only 38 percent reported that teaching effectiveness was quite or very important, and 34 percent said it was either not or only somewhat important. The authors of the research report observed, "This wide discrepancy between the preferred and perceived value attached to such a central activity suggests widespread faculty dissatisfaction with the underemphasis placed upon teaching in the incentive system."[16]

At each school except the State university, the faculty indicated that research and scholarly activity should be more important than they thought they actually were. At the State university, the faculty considered research to be as important as they thought it should be.

The incentive system in all types of institutions should provide rewards for innovations in meeting the needs of "lower half" students as well as those of higher academic ability and cultural background; devising means of measuring potentiality in other ways than by conventional verbal kinds of interests and aptitudes, some of which otherwise would have never been suspected; devising curriculums for general education related to, rather than separate from, vocational curriculums; and inventing ways of leading students from current interests and immediate activities to deeper values and more systematic learning.

Adequate rewards for effective teaching should do much to strengthen undergraduate education. But "new teachers" are needed to meet the needs of the "new students." Many teachers are needed from backgrounds which are now underrepresented in college faculties. More teachers are needed who think of education as the means to the full development of the individual student. More teachers are needed who will subscribe to the following educational philosophy, cited in the *Report on the Student in Higher Education*:

> Our basic assumption is that the college is a major agent in promoting the personality development of the young adult. Whether it realizes it or not, the college has a major effect upon the development of the whole human personality for the student between the ages of 17 and 25. Moreover, the young person becomes what he becomes not *only* because of what he hears in the classroom and not even *mainly* because of what he hears in the classroom. His interaction with teachers, his encounter with the social structure of the college administration, the friendship groups in which he becomes integrated, the values he acquires from student culture, the atmosphere of flexibility or rigidity which permeates the school environment, the playfulness or the seriousness, the 'practicality' or the 'spontaneity' of operative educational goals of his college—all these have an immense . . . impact on the evolution of the young person's self view and world view, on his confidence and altruism, on his mastering of the needs for identity and intimacy.[17]

IV. RECRUITMENT AND PREPARATION OF COLLEGE TEACHERS

New Sources of Faculty Supply

Where can prospective teachers who are as interested in student development as in formal learning be found? Many people have suggested that members of the Peace Corps should be suited to that kind of college teaching. Sanford has proposed that staff members who are now engaged in counseling and other phases of student personnel programs should be recruited for teaching in institutions concerned with individual development. Faculty members may be recruited from the professions and semiprofessions and from industry, and given crash programs of orientation and training in teaching.

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[14] Clark Kerr, "Higher Education in the Troubled City," *op. cit.*

[15] The Committee on the Student in Higher Education, *Report on the Student in Higher Education*. New Haven: The Hazen Foundation, 1968, p. 62.

[16] J. G. Gaff and R. C. Wilson, "The Relationship Between Professors' Views of the Formal Incentive System and Their Career Status." Berkeley, California: Center for Research and Development in Higher Education, University of California (mimeographed).

[17] Committee on the Student in Higher Education, *op. cit.*, p. 5–6.

A recent study showed that more than half of the faculty members engaged in teaching career subjects in 27 2-year colleges in New York State came from business or other nonteaching employment. Fifteen percent of the faculty who were teaching transfer courses also came from these sources. Not a few such faculty members may be more effective in organizing courses for the purposes of general education than those who have more conventional academic backgrounds.

A special effort should be made to recruit faculty or future faculty members from minority groups. These prospective college teachers should be identified as undergraduates, guided into postgraduate programs of preparation for teaching in technical institutes, community colleges, and 4-year institutions, and given stipends that will prepare them for teaching employment in the shortest possible time. Recruitment from minority groups should simply be a part of a comprehensive recruitment of prospective college teachers among undergraduates who are interested in students and teaching. One consequence of the ferment in higher education is an apparent increase in such students,[18] coupled with stipends explicitly designated for prospective faculty members more interested in teaching than research. These stipends should be financed by large foundation grants and Federal appropriations over a 5- to 10-year period.

If prospective college teachers could be identified, recruited, and supported, where could they find programs designed primarily for teachers rather than primarily for researchers? Such programs, for the most part, are still to be established.

Teaching Assistantships

One of the perennial subjects in higher education is the preparation of college teachers through the university teaching assistantship. A study made in 1967 by Koen and Ericksen turned up 450 graduate institutions which listed courses or programs for assisting beginners in the art of college instruction.[19] Four-fifths of these programs were for students working for the doctor of philosophy degree. Other institutions offered the degree of master of arts, master of philosophy, or a specialist degree especially designed to prepare junior college and undergraduate teachers.

However, in an assessment of programs for the preparation of college and university teachers, Heiss found little evidence that the high rhetoric describing these programs was accompanied by carefully devised means of exploring educational purposes, understanding students, devising curriculums relevant to purposes and to students, and acquiring skill and versatility in stimulating and guiding learning.[20] Forty percent of the teaching assistants reported that they had been given insufficient guidance. This lack of assistance is especially unfortunate since teaching assistants are usually raw recruits, i.e., first-year graduate students. The best of these students are often drawn off into research assistantships and their places are filled by more neophytes.

New Programs Essential

Even if there were more widespread and effective efforts to make the teaching assistantship in major universities a useful preparation for college teaching, the great body of college teachers would still be ill-prepared to work with great numbers of students, to teach in new kinds of institutions, and to participate in new kinds of courses and novel educational programs. Only new plans of preparation will produce teachers who can measure up to new educational demands. Here are some suggested characteristics for possible programs:

1. The programs should be organized on a university-wide basis, rather than departmentally sponsored. Departments are usually resistant to interdisciplinary courses, yet such courses need to be devised not only for general education, but also for many fields of concentration, such as urban studies. Furthermore, departments are ordinarily more concerned about preparing specialists and researchers than broadly gauged undergraduate teachers. Neither should the preparation of college teachers become the major responsibility of schools or departments of education which, however, might participate in university-wide programs.

2. A new doctoral degree for college teachers is not absolutely essential, but probably highly desirable. The Center's survey showed that there is growing faculty support for such a degree. Heiss reported that in her study of 1,600 faculty members, representing 12 academic fields and 10 of the best graduate institutions, more than a third favored the introduction of the teaching doctorate. The University of California at Berkeley has established a Ph.D. degree in mathematics, science, and education designed for future teachers in junior colleges and undergraduate institutions. The University of Illinois has announced Doctor of Literature and Doctor of Chemistry degrees, including a teaching internship which may be taken outside the University, especially for prospective college teachers.

3. If a special university-wide program to prepare college teachers is established, with or without a new degree, it should be interdisciplinary rather than departmental. Not many models of interdisciplinary doctorates exist. Some years ago, several universities introduced divisional doctoral degrees in the social sciences. Few have survived. Of those still in

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[18] See J. E. Rossman and J. C. Bentley, *Factors Which Led College Seniors to Choose Teaching Careers*. Final Report of Project No. 5-8238. Washington, D.C.: U.S. Department of Health, Education, and Welfare, September 1966.

[19] Frank Koen and S. C. Ericksen, *An Analysis of the Specific Features Which Characterize the More Successful Programs for the Recruitment of College Teachers*. Ann Arbor: University of Michigan, Center for Research on Learning and Teaching, January 1967. (Final Report, Project No. S-482, U.S. Department of Health, Education, and Welfare.)

[20] A. M. Heiss, "The Preparation of College and University Teachers." Berkeley: Center for Research and Development in Higher Education (mimeographed). Included in a report of the U.S. Commissioner of Education on *The State of the Education Professions*, to be published by the U.S. Office of Education, Department of Health, Education, and Welfare.

existence, the ones at the University of Chicago and Syracuse University are outstanding. Syracuse has been notably successful in producing college teachers in the social sciences.

4. Programs for the teaching doctorate should include a substantial professional component. Formal courses in higher education may be professionally useful, but they may be less effective than direct experience. This experience might take the form of an internship, participation in a wide range of institutional and community activities, and observation of educational innovations.

Prospective college teachers should investigate work-study programs, methods of independent study, computerized and programed instruction, and other modern educational technologies. They should observe or devise methods of coordinating field work with campus study or of alternating periods of formal study and community projects. They should explore the feasibility of adapting to American institutions the alternation of work periods with formal study, somewhat after the manner of the sandwich courses offered by the English technical colleges and technological universities.

Prospective college teachers should also familiarize themselves at firsthand with innovations in instruction, such as panel teaching of interdisciplinary courses, student-led discussion groups, group tutorials combined with large lecture sections, freshman-sophomore as well as junior-senior seminars based on students' special fields of interest, the use of special informants from minority groups or community agencies, and methods of building ties between the campus and the city.

Future college teachers should observe innovations in organization, such as colleges within colleges, including those emphasizing particular interests such as ethnic studies or urban problems, or particular academic fields such as the social sciences. They should discover the possibilities in cluster colleges, such as those at the University of the Pacific in California, or the Santa Cruz campus of the University of California, not only for educational innovations, but for new patterns of community governance. They should observe the activities of learning-living units which include residence halls, faculty offices, and classrooms designed to encourage close personal relationships between students and faculty.

Through observation and/or participation, prospective teachers should make a special effort to acquaint themselves with methods of preparing disadvantaged students for college work. They should see special programs organized cooperatively between colleges and secondary schools. They should observe special summer programs preceding college admission, and remedial projects for college students.

Both prospective college teachers and those already in service should participate in such projects as the federally-supported program for youth to teach teachers about ghettos. Twenty urban junior college teachers, both black and white, from across the country, took part in the summer of 1969 in a 4-week program at the City College of San Francisco, in which 20 blacks from four of the city's ghettos tutored the faculty members on life in black families and black communities. As described by one of the members of the Mission Rebels, a self-help organization of underprivileged youth which participated in the project, each of the tutors took one teacher in tow for 1 week. They spent every afternoon in the ghetto where the tutor lived, and, as reported in the *San Francisco Chronicle*, July 7, 1969, "whatever that kid normally does, that's what the professor is going to do." The young leader went on:

> Let's say some kid gets arrested. Well, the professor knows what the constitution says and what the laws say about civil rights and getting bail, but this time the professor will see for himself what really happens. Or, how long does it take to get someone who is injured into a hospital?

The teacher education program should set aside a definite block of time for such experiences as those previously noted. One institution, or even one community, may not supply a desirable range of opportunities for observation and participation, but many possibilities should be available within a reasonable distance of the training center. Large-scale financial support will be necessary to make full use of the available resources.

5. Internships in college teaching (except for teaching assistantships, which really do not qualify) are now seldom offered, but they should be integral parts of special programs for the preparation of undergraduate teachers.

The University of California recently announced the inauguration of a cooperative internship program designed to recruit into community college teaching candidates of outstanding potential who are committed to teach the broad range of community college students, particularly the educationally disadvantaged. The program has three phases. The first is a preservice institute held at the University in Berkeley during the summer for an intensive introduction to the characteristics of students, the purposes of the college and problems of instruction. The second phase takes place while the intern carries three-fifths of a load of teaching in a cooperating junior college, one class of which is taught in collaboration with a "master instructor" from the regular faculty. During this phase, according to the prospectus, the intern is studying his students, preparing teaching material, exploring teaching methods, and acquainting himself with the functions and organization of the college. During this period he is registered for credit at the university, although the actual work is done in the field. In the second semester or third phase, the intern teaches four-fifths of a load. During the year he will attend several 1-day workshops or seminars conducted by the cooperative program.

Something comparable to this junior college internship could be made a part of a 3-year program for the doctorate in college teaching. For the prospective undergraduate college teacher, the experiences of the internship should provide background for a systematic study of the problems of higher education.

"If a program to prepare college teaching is ever to emerge as a viable and respected degree," said Heiss, "it must have strong and aggressive administrative leadership, effective representative support from the teaching faculty, and a political place and power within the university structure."[21] And, to get the teaching doctorate off the ground, a large infusion of financial support, necessarily in great part from Federal sources, will be required.

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[21] A. M. Heiss, *op. cit.*

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The Outlook for Adequate Faculty in Public Postsecondary Vocational Education

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I. POSTSECONDARY OCCUPATIONAL EDUCATION—A PRELUDE

There are now more than 750 public junior colleges in operation in the United States and new ones are being started at the rate of one per week. This is an incredible pace. Historically, it stands as a unique phenomenon of the present-day expansion of our higher education system.

In addition, as part of this growth, there are more than 850 area vocational schools in the Nation, most of which were constructed with the help of funds made available through the Vocational Education Act of 1963. There has also been comparable growth in the private proprietary and nonprofit postsecondary vocational, technical, and business school field. What has precipitated this new educational development? What is postsecondary occupational education in practice? And what can be expected in the future of postsecondary occupational education? These are prime questions for educators, planners and policymakers, and the public.

Early authorities regarded the junior college as the upward extension of secondary education for 2 (13th and 14th) years. Such institutions were neither pretentious nor forbidding for almost a century. William Rainey Harper, considered the father of the junior college movement, viewed them as an "intellectual stepping stone" on the way to a baccalaureate degree—steeped in the higher education tradition. Junior colleges were not in any way intended to threaten the technical or mechanics institutes of that day and age.

Today, however, many of these institutions accept the responsibility for providing occupational education as an integral part of their offerings. The programs generally lead to an associate degree, but are often not specifically designed as transferable courses for 4-year colleges.

The forces of change have been steady but constant to bring about the recognition of occupational education as a major function of 2-year postsecondary institutions. As recently as 1953, according to a study of 302 community colleges by Gail Shannon reported in the *Educational Research Bulletin* at Ohio University in January 1963, 80 percent of the occupational programs—then referred to as "terminal" programs—were concentrated in 5 percent of the institutions. Since that time, and particularly in the last 5 years, the American Association of Junior Colleges has been giving strong leadership to broadening programs so as to increase and enlarge the role of community colleges in occupational education.

The vast changes set in motion in the community college branch of higher education in the Nation reflect the sociotechnical pressures of man and his environment. It is the inevitable force of the needs of youth and adults coupled with the ever hungry demands of an increasingly technical labor force which have thrust upon the heretofore complacent junior college enterprise a new and exciting image. Indeed, we are on the threshold of a revolutionary new concept in American education—free continuing education for all. As manual, menial, unskilled, and semiskilled jobs continue to diminish, the demand for permanent and comprehensive programs of continuing, year-round night and day career oriented education, available for all people in all locations, is a pressing and urgent need.

In a recent study by Rhine and Creamer, the total number of industrial technicians needed nationally by 1974 was shown to be 474,000. There will, however, be only 323,000 available from all existing sources. This will leave a critical shortage of over 151,000, the study noted, or a deficiency of 31.4 percent. This is a clearly intolerable situation. Furthermore, to understand the magnitude of the task ahead, one needs but picture a labor force projected by the U.S. Department of Labor to expand from 85.2 million in 1970 to over 101 million in 1980, with about 10 million of the gain being men and 6 million being women (table 1).

Obviously, the entire mission of postsecondary occupational education cannot nor will not be handled by community colleges. It is tantamount to foolishness to think that postsecondary institutions in the traditional sense will fill the gap for all occupational preparation at the adult years. Many institutions and organizational patterns will be needed to meet the total needs. The following listing of training objectives attempts to identify the roles assumed by some of these, but the span or spectrum of 2-year colleges should be noted. This listing also shows the overlapping function of different types of schools.

Training Objectives

	Single Skilled Occupations	Skilled Craftsmen	Technical Specialists	Engineering Technicians
Technical Institute				X
Community/ Junior Colleges	X	X	X	X
Area Vocational Technical Schools		X	X	X
Vocational-Industrial or Business Area Vocational School, in-Plant, Multi-Skill centers, etc.	X	X	X	

It is obvious, in addition, that no sharp lines of distinction in roles exist for any of these institutional patterns for the Nation as a whole. Nor can it be said, moreover, that within occupations themselves there are any clear-cut definitions of occupational classifications. The preceding table traces this ambiguity in levels of occupational class along with the relative amounts of manipulative and mental skills required of workers. As indicated, each grouping of occupations reflects a gradation of technical knowledge and manipulative skills.

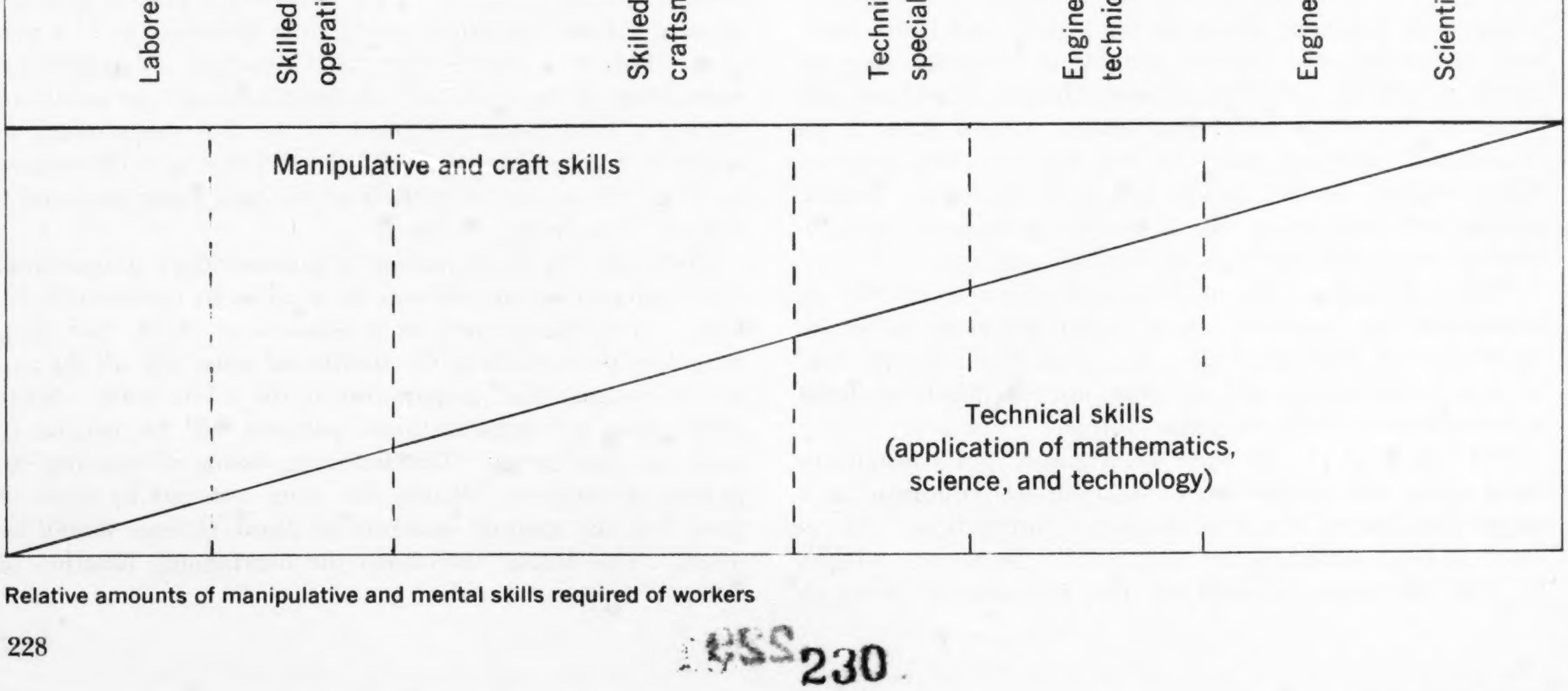
Postsecondary vocational-technical education is concerned with all levels of training which fall between the extreme limits of common laborer and engineer or scientist. It in-

TABLE 1—*Projected Labor Demand by Occupational Areas*

Inst. Program	Current Employment	Projected Labor Supply					
		Projected Labor Demands		Voc. Ed. Output		Other Sector Output	
		1970	1974	1970	1974	1970	1974
TOTAL	(38) 49,165,417	(38) 8,655,795	(36) 10,860,352	(39) 1,144,278	(38) 1,738,397	(33) 472,435	(34) 606,777
AGRICULTURE	(39) 4,550,465	(39) 731,320	(37) 762,655	(41) 93,388	(39) 120,420	(33) 46,719	(29) 75,645
DISTRIB. MARKETING	(38) 9,036,660	(37) 1,555,555	(35) 1,995,660	(39) 142,351	(37) 237,272	(30) 57,728	(32) 63,140
HEALTH OCCUPATION	(39) 1,462,271	(38) 360,594	(36) 478,234	(39) 50,747	(37) 95,604	(33) 30,476	(32) 42,141
HOME ECONOMICS	(37) 3,646,380	(36) 698,366	(34) 869,925	(39) 121,487	(39) 192,286	(26) 48,242	(26) 54,851
OFFICE OCCUPATION	(39) 10,381,651	(38) 1,795,987	(36) 2,367,829	(39) 378,088	(38) 528,568	(34) 101,542	(33) 166,564
TECHNICAL	(38) 1,480,043	(35) 276,373	(34) 338,765	(34) 47,788	(35) 80,111	(29) 31,263	(27) 20,489
TRADE & INDUSTRY	(36) 18,607,947	(38) 3,237,600	(30) 4,047,284	(38) 310,429	(38) 484,136	(33) 156,915	(31) 183,949

Source: U. S. Office of Education, State Plans for Vocational Education, July 1969.
Note: Numbers in ( ) indicate number of States reporting.

Figure 1. Manipulative and Craft Skills.



Relative amounts of manipulative and mental skills required of workers cludes in its scope all occupations not generally considered professional which do not require a baccalaureate or higher degree. It is more precisely defined in the Vocational Amendments Act of 1968 (Public Law 90–576) as:

> 'Postsecondary vocational education' means vocational education which is designed primarily for youth or adults who have completed or left high school and who are available for an organized program of study in preparation for entering the labor market. The term shall not be limited to vocational education at the level beyond grade 12 if the vocational education needs of the persons to be served, particularly high school dropouts, require vocational education at a lower grade level. Anything modified by the adjective 'postsecondary' pertains to postsecondary vocational education as herein defined.

The status of the present postsecondary occupational education movement must be examined without strict designation as to institutional setting. By describing it in terms of curriculums, student populations, faculty and staffing, and administrative patterns, dimensions will be given to the problem. Trends and future needs are projected from the data, and the conclusions, often, are startling.

II. FACULTY RESOURCES

Introduction

American society is, by far, the world's most highly industrialized and technically sophisticated. The dynamic nature of our application of the sciences, as reflected in business and industrial practices, requires a working force whose mean educational level is rapidly shifting upward. Within the lifetime of most of our people, the average 8-year education of the 1920's has been supplanted by one of 12 years in the 1940's. During the decade of the 1950's technological demands spurred development of a variety of 2-year postsecondary technical occupational education institutions. Indicative of the situation was the burgeoning electronics industry of the 1940's that exploded in the following decade to virtually change the face of business and industry.

Similar developments were also occurring in other disciplines. These were, in the main, engendered by government-sponsored research supporting the Nation's huge defense and space programs. While the impact upon technology was revolutionary, the practical result was a constant pressure to shift the educational level of the average worker upward to correspond with more demanding occupational entry-level requirements. The best source for this growing demand for technical or semiprofessional workers, of course, was the postsecondary institution.

Concomitant with the demands of the labor market for personnel with higher training, there was an increasing public awareness of the direct relationship between training and earnings. These two factors, in effect, combined to bring about the demand for establishment of more postsecondary institutions. The result of this expansion has been the incredible pace of growth—one new community college per week, or better—in which the movement now finds itself.

Moreover, availability of Federal funds for construction of facilities and development of occupational programs from the Vocational Education Act of 1963 also encouraged the expansion and creation of technical institutes and secondary/postsecondary area vocational-technical schools. Many of these institutions began to take on the flavor of community colleges. In order to partake of Federal funds set aside for postsecondary education, the converse was also true. With the rapidly increasing number of community colleges, technical institutes, and area vocational-technical schools developing new facilities and programs, it was not surprising that such institutions suffered from some of the same growing pains to which industry is subject.

In any educational institution, after the question of funding is resolved, the paramount problem is finding an adequate faculty. In a postsecondary vocational-technical setting, the meaning of the term adequate assumes a special significance. Since the major thrust of vocational-technical education must be orienting people to jobs, it is essential that the instructor possess not merely an academic knowledge of a particular discipline but, in addition, a practical, work-oriented approach born of personal experience and complete familiarity with current industrial practices in his area of specialty.

Further, he must be sensitive to the problems of the disadvantaged who may, for some institutions, constitute a substantial proportion of the student body. Such an individual, from the standpoint of ability alone, would be highly marketable to industry. It would be unreasonable to assume that dedication to teaching would, in itself, provide sufficient motivation to insure the Nation an adequate supply of qualified faculty to postsecondary vocational-technical education. There must also be a comprehensive plan of inducements emanating from the Federal level or public sector. In order to determine the requisite degree of this involvement, it is essential to understand the background and size up the needs in order to intelligently formulate a national policy.

Types of Vocational-Technical Education

While the statistical data are far from complete, the State plans for vocational education mandated by the Vocational Amendments of 1968 provide us with a good indication of the emphasis being placed on the various areas of vocational education. All State plans (48) on file with the Division of Vocational-Technical Education, United States Office of Education on July 22, 1969, were reviewed. Each State is required to make projections on an annual and 5-year basis.

As shown in table 2, by 1974 there will be a demand for approximately 10,500 new vocational education teachers in public institutions at the postsecondary level. This figure represents an increase that is 39 percent higher than the number projected for 1970.

The greatest numerical increase is in the area of technical education (2,412), with office education (2,193) following closely behind. While these figures represent projected increases of 37 percent and 40 percent above the 1970 levels, the rates of increase in other areas are highly significant for purposes of long-range planning. In a highly mobile technological society with leisure time becoming increasingly available, it is natural to find a rapid growth in service-related industries. Though the actual number of teachers anticipated is comparatively small, public service education, with an increase of 162 percent by 1974, is the fastest growing of all the vocational

TABLE 2—*Number of Teachers of Postsecondary Vocational Education, Nationally*

PROGRAM	1970		1974			
	Number of Teachers	States Reporting	Number of Teachers	States Reporting	Numerical Increase	Percent Increase
Agriculture Production	386	30	498	33	112	29
Agriculture Off-Farm	518	33	727	35	209	40.5
Distribution and Market	1,301	42	2,094	43	793	61
Home Econ. Consumer & Home	290	26	627	33	337	116
Home Econ. Gainful Emp.	400	33	1,042	34	642	160.5
Office	5,445	44	7,638	43	2,193	40
Public Service	128	23	335	24	207	162
Technical	6,484	44	8,896	44	2,412	37
Trades & Industry	7,118	42	8,844	42	1,726	24
Health	4,826	43	6,666	43	1,840	38
TOTALS	26,896		37,367		10,471	39 Avg.

Source: U.S. Office of Education, State Plans for Vocational Education, July 1969.

fields. It numerically exceeds by almost 100 instructors the projected increase in agriculture production education—209 and 112 respectively.

The composite fields of home economics education in the postsecondary area is also highly significant since they are projected as showing considerable increases both in numbers and percentages. The combined figures indicated that almost 1,000 additional teachers will be required by 1974. This constitutes an increase of 142 percent above the present level.

Following closely behind office education are the areas of health, and trades and industry. While their percentage increase is in line with the national average, the numbers involved are significant—1,840 and 1,726 respectively. Distributive education, on the other hand, shows a growth rate of 61 percent, well above the average, with an estimated increase of almost 800 additional teachers during the next 4 years. This undoubtedly reflects the growing trend toward professionalism in marketing and retail organizations. This industry is currently demanding higher entry level abilities on the part of its workers.

As might be expected, one of the lowest rates of growth is found in agriculture production. Here, the projected increase is only 29 percent with a net numerical requirement of only 112 teachers over the 4-year period. By separating off-farm agriculture from agriculture production, we find that this area maintains itself well with the national average, indicating a 40.5 percent increase that reflects a numerical increase of 209 teachers by 1974. The rationale for these figures is found in the fact that more than two-thirds of the Nation's population live on approximately 2 percent of the land, while one-third lives on the remainder. Metropolitan areas are gaining at the expense of rural areas at a rate of almost 1 million persons a year. If this rate continues, it is anticipated that the rural areas will become population vacuums.

Level of Faculty by States

No consideration of teacher resources can be complete without investigating how the teachers are being utilized and the total postsecondary population that they serve. Table 3, drawn from State plans, defines the number of teachers and enrollments, by State, in their postsecondary vocational programs scheduled for the fiscal year 1970. Of the 44 States reporting, projected postsecondary enrollments are shown to be in excess of 800,000 while the number of teachers approaches 25,000. This means a more than 30 to 1 pupil to teacher ratio. Any attempt to lower this figure to a more desirable 20 to 1 ratio would, of necessity, increase the total projected need for teachers for 1970 from 10,500 to more than 15,000.

It must also be noted that the age level that qualifies a student for such instruction has recently been lowered from 18 to 16 years, thus smudging considerably the already indistinct lines that separate it from postsecondary.

Data supplied by the American Association of Junior Colleges in its 1969 directory show that of 993 colleges, both public and independent, 818, or 82 percent, reported occupational programs. Obviously, the percentage of faculty within any single college that is engaged in such programs varies widely from one institution to another. A survey made in 1968 of the program structure of Mercer County Community College in Trenton, N. J., reveals that 35 percent of the faculty are so engaged.[1] A random spot check of similar community colleges indicates that, while this figure may vary slightly, it appears to be a good working value. The total faculty listed in all junior colleges is placed at 84,427. If the 35 percent figure is applied, then there are now somewhere in excess of 29,500 occupational teachers in these postsecondary institutions. This figure, however, includes both public and private schools, with the latter constituting 40.5 percent of the total number of institutions reporting. If this factor is applied to the total number of such teachers, it indicates the number of occupational teachers in public junior colleges is approximately 19,400. Adjusting for the one year differential between the 1969 reporting period of the American Association of Junior Colleges and the 1970 estimate of the composite State plans for vocational education, and subtracting the 19,400 figure from the total postsecondary teacher force of 36,800, the number of teachers in both the technical institutes and the area vocational-technical schools postsecondary programs is in the area of 15,000.

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[1] C. Buzzell, *Mercer County Community College: A Demographic Analysis of the Faculty for the Academic Year 1968–69.* Trenton, New Jersey: 1968.

TABLE 3—*Summary by States—Postsecondary Vocational Education*

States	Postsecondary Instructional Programs FY 1970		No. of Junior Colleges As of October 1967			Jr. College Faculty
	No. of Teachers	Enroll-ments	Total	Public	Independent	Total
Alabama	505	11,938	20	15	5	909
Alaska	48	1,625	7	6	1	211
Arizona	251	5,277	7	7		735
Arkansas	319	5,000	7	3	4	181
California	5,993	322,509	90	87	3	16,032
Colorado	518	11,203	11	11		955
Connecticut	194	6,000	21	12	9	1,414
Delaware	17	285	4	2	2	206
District of Columbia			4	1	3	205
Florida	N.A.	69,748	32	27	5	4,384
Georgia	715	13,605	22	12	10	903
Hawaii	123	4,448	6	5	1	376
Idaho	140	1,793	4	2	2	385
Illinois	1,895	48,000	53	41	12	5,235
Indiana	165	4,393	4	2	2	539
Iowa	626	8,520	30	24	6	2,221
Kansas	182	3,758	21	16	5	763
Kentucky	424	6,496	22	15	7	730
Louisiana	634	16,971	4	4		361
Maine	105	1,433	4	4	2	137
Maryland	133	6,531	18	13	5	1,617
Massachusetts	409	9,448	30	15	16	2,130
Michigan	1,159	34,055	32	28	4	4,137
Minnesota	545	15,500	21	18	3	835
Mississippi	400	7,145	26	19	7	1,154
Missouri	405	8,865	21	13	8	1,424
Montana	150	2,608	3	3		105
Nebraska	221	3,439	7	6	1	208
Nevada	141	1,813	1	1		34
New Hampshire	85	1,340	4	1	3	131
New Jersey	247	5,927	21	11	10	1,634
New Mexico	157	26,941	8	8		246
New York	N.A.	N.A.	61	39	22	9,001
North Carolina	971	26,500	61	47	14	2,842
North Dakota	135	3,331	6	4	2	299
Ohio	559	13,848	26	23	3	1,998
Oklahoma	215	4,855	15	11	4	481
Oregon	N.A.	12,228	15	12	3	1,434
Pennsylvania	498	20,139	46	32	14	3,378
Rhode Island	34	930	3	1	2	319
South Carolina	508	6,739	21	16	5	954
South Dakota	128	1,373	2		2	57
Tennessee			12	5	7	520
Texas	1,024	26,132	52	42	10	4,250
Utah	276	5,833	5	5		417
Vermont	53	605	5	1	4	205
Virginia	1,035	11,382	27	17	10	1,320
Washington			22	22		3,282
West Virginia			6	3	3	190
Wisconsin	2,100	29,715	23	20	3	2,065
Wyoming	57	693	6	6		265
Canal Zone			1	1		56
Puerto Rico			13	3	10	557
TOTAL	24,499	827,917	993	739	254	84,427

Source: U.S. Office of Education, State Plans for Vocational Education, 1969. AAJC Enrollments, Oct. 1967.

Table 4—*Connecticut Community College Unclassified Staff Structure as of December 1968*

	Greater Hartford	Housatonic	Manchester	Mattatuck	Middlesex	Northwestern	Norwalk	South Central
Unclassified Staff Composition								
Full Time (N–309)								
% Faculty	59	77	74	72	76	83	89	62
% Administration	41	23	26	28	24	17	11	38
% Total System Full-time Staff	9	8	21	9	8	14	26	5
Part-Time (N–367, 55% of Total)								
% Total College Staff (N–676)	64	71	46	70	70	36	23	60
FT/PT	1/1.8	1/2.5	1/0.9	1/2.4	1/2.3	1/0.6	1/0.3	1/1.5
Faculty Sex								
% Male	75	80	79	81	90	71	64	70
% Female	25	20	21	19	10	29	36	30
Average Age								
Faculty	41.1	35.3	35.3	37.9	35.0	37.8	43.7	40.1
Highest Earned Degree								
Faculty								
% Bachelor's	0	20	19	5	15	20	9	0
% Master's	81	80	73	90	85	80	84	100
% Doctorate	19	0	8	5	0	0	7	0
Administration								
% Bachelor's	18	0	6	38	33	0	0	17
% Master's	73	83	88	38	50	70	67	66
% Doctorate	9	17	6	24	17	30	33	17
Academic Years Completed With System Since 1965								
% 1	52	23	17	62	40	31	6	75
% 1	37	58	35	31	32	29	32	25
% 2	11	19	35	7	28	33	50	0
% 3	0	0	13	0	0	7	12	0
Staff by Rank								
% Professor	4	0	0	4	0	0	2	0
% Associate Professor	12	0	7	0	0	5	10	0
% Assistant Professor	28	52	44	29	30	24	45	0
% Instructor	48	30	37	60	60	45	40	40
% Lecturer	8	18	12	7	30	26	3	60

Faculty Salaries and Benefits

The percentage distribution of faculty with respect to rank, within a postsecondary school, varies widely between the various departments. The same is true for earned academic degrees. When examined as a composite within a given institution, the distribution tends to assume a bell-shaped curve, with the preponderance of faculty at the assistant professor and instructor levels, and holding earned masters' degrees.

A good example of the staff structure of community colleges can be found in Connecticut, as shown in table 4.

The Department of Health, Education, and Welfare, in a report, "Criteria for Technician Education," 1968, made these observations on salaries for faculty:

> The salary schedule for instructors and department heads is usually related to preparation and experience, and is intended to aid in attracting and retaining qualified staff. The basis for judging salary status is usually a salary schedule in context with the entire organizational and promotional system of the institution. More and more institutions are adopting the 12-month annual salary and employment structure for all professional staff members. This is found to be especially advantageous in attracting and developing teachers for the technical specialty courses. The annual salary plan is attractive when compared to other employment opportunities in institutional, private, or industrial employment. It provides the staff members with year around employment, permits time for study and development of new programs, or improvements in existing ones and facilitates operation of summer programs.

The American Association of University Professors, in its June 1969 bulletin, published the weighted average salaries and average compensations by rank in the various institutions during the 1968–69 academic year. The figures are predicated on a 9-month basis and should be increased by approximately 20 percent to indicate the level for a 12-month arrangement. Table 5 indicates salary and compensation levels for junior

Table 5—*Weighted Average Salaries and Average Compensations by Rank and Type of Institution*

Academic Rank	*Salary*		*Compensation*	
	Public Institution	Private Institution	Public Institution	Private Institution
Junior Colleges				
Professor	16,246	12,693	18,183	14,161
Associate Professor	12,903	10,893	14,314	12,167
Assistant Professor	10,776	9,170	12,052	10,168
Instructor	8,863	7,501	9,902	8,229
Technical Institutions				
Professor	16,007	16,899	16,668	19,353
Associate Professor	12,614	12,312	13,242	13,840
Assistant Professor	10,627	10,168	11,200	11,235
Instructor	8,175	7,657	8,690	8,300

Source: *American Association of University Professors Bulletin,* June 1969.

Table 6—*Weighted Average Salary and Average Compensation by Rank, Type of Institution, and Geographic Region*

Classification of Institution	Professor		Associate Professor		Assistant Professor		Instructor	
	Non-South	South & Border	Non-South	South & Border	Non-South	South & Border	Non-South	South & Border
TECHNICAL INSTITUTIONS								
Compensation								
Public	16,067	15,980	12,607	12,643	10,554	10,682	8,552	7,920
Private	16,900	—	12,313	—	10,169	—	7,657	—
Salary								
Public	17,108	16,461	13,501	13,119	11,294	11,122	9,216	8,323
Private	19,354	—	13,841	—	11,236	—	8,300	—
JUNIOR COLLEGES								
Compensation								
Public	17,059	12,320	13,413	10,996	11,148	9,313	9,189	7,819
Private	13,258	11,184	11,062	9,839	9,260	8,272	7,521	7,291
Salary								
Public	19,297	12,081	15,090	11,414	12,640	9,744	10,435	8,192
Private	14,771	12,305	12,345	10,703	10,253	9,002	8,239	7,855

Source: *American Association of University Professors Bulletin,* June 1969

colleges and technical institutions on a 9-month basis.

Faculty salaries in both institutions are very similar, with the widest divergence being only $700 in the rank of instructor in the junior college over that of his counterpart in the technical institute. Just the opposite is true, however, at the rank of professor, although the salary differential is not as great. Salaries also vary with geographic location. Table 6 shows the salary and compensation levels for the various academic ranks in non-Southern areas as opposed to Southern and border locations. Geographic location appears to have only a minimal effect on technical institutions. However, variations approaching 40 percent are found in junior colleges.
of competent personnel to function in a substitute role varies widely between programs and institutions. There appears to be little hard data on the recruitment of such people. However, there are several areas in which they might be found.

Area educational institutions frequently have personnel with the requisite backgrounds and some free time to fill in as substitutes. Industry, too, usually has within its organization individuals with the appropriate knowledge and teaching skills, but frequently lacking in formal academic qualifications. There are also, within any given area, a substantial number of retired persons from both the academic institutions and industry. Of the possibilities, it would appear that the latter is the most fruitful since the time commitments in the

The Faculty Substitute

Obtaining satisfactory substitutes in lieu of regular staff is a problem that invariably taxes the ingenuity and imagination of even the best institutional administrator. The availability
first two categories are usually such as to preclude their availability during the normal daytime instructional periods. Individuals in these categories are usually found teaching similar courses in adult evening programs. This fact again emphasizes the point that apparent differences between adult and

postsecondary education are tending toward the time of day in which they are held. In general, the exigencies of acquiring sufficient staff to flesh-out the programs cause the administrators to overlook the absence of certification and academic backgrounds, where such are normally required of permanent staff, providing the substitute can demonstrate a proven competence in his discipline coupled with an ability to communicate. (Note the HEW "Criteria for Technician Education"—1968):

> Qualifications of nonprofessional assistants with noninstructional duties vary with the duties they perform. Graduate technicians and technical assistants who assist in the laboratories and library should be graduates of good technical programs or have valid equivalent preparation. They usually should have had employment experience in their specialty or work closely related to it and exhibit the same attitude and interest in their duties as the professional staff.

The one inflexible rule regarding substitutes is that the quality of instruction must not be diminished by their employment.

Sources of Teachers

The cornerstone of all education is the teacher. One of the first order priorities, therefore, must be to determine how society produces such a person. An examination of the faculty of postsecondary institutions reveals that most teachers arrive in occupational education somewhat by chance. In short, they are not the products of educational curriculums, designed to produce competent occupational educators. As the HEW report points out, however, graduates of high quality technician education programs, after having acquired suitable employment experience, and who have then continued their technical education to a professional level—baccalaureate or beyond—frequently become excellent teachers in programs for technicians. The reasons for this are obvious. Persons with this type of background are more likely to understand the objectives and unique instructional requirements of technical education within their specific field.

As an example, the Engineering Technology Division of Mercer County Community College of New Jersey was examined by Buzzell in terms of the highest degrees held by the professional staff. There were relatively few doctoral or associate degrees. About 60 percent held master's, 33 percent held bachelor's, and there was a significant 5 percent who had no degree at all. These statistics suggest the Engineering Technology Division had drawn its faculty from the widest possible spectrum of educational backgrounds, since it might be speculated that those of the faculty holding no degrees were the products of courses of study at the secondary level with considerable industrial experience. While those few with the associate degrees may have come from either a technical institute or community college background, those with higher degrees were the products of colleges and graduate schools of universities.

The occupational field of office education is the second highest area of demand for additional teachers during the next 4 years. The Commerce Division of Mercer County College reflects a distribution of faculty similar to the Technology Division. This suggests a highly similar experience.

It could be assumed from this that the primary source of professional staff for our postsecondary vocational programs are the departments and divisions of colleges and universities which are not oriented toward education *per se*. One possible exception is the area of trade and industrial education. In this field, a large proportion of the teaching personnel have extensive industrial backgrounds and have arrived in education through the expertise they acquired in secondary level vocational schools, technical institutes, and apprenticeship programs within industry. Such people who embark upon a teaching career usually do so in area vocational-technical schools were certification is required. In most States, such certification is a 2-year effort, after which the teacher is encouraged to continue his education to the baccalaureate level. His formal academic experience then becomes one within the field of education itself.

One of the principal concerns of postsecondary vocational education is the assurance of an adequate supply of teachers able to relate to the occupational field. In the past, teachers have tended to gravitate toward the vocational area from other fields of education. With the development of advanced degree programs in many major universities, this is no longer true. In 1963, the New Jersey State Board for Vocational Education in cooperation with Rutgers University—the State University, established the Department of Vocational-Technical Education within the academic structure of the Graduate School of Education. This Department offers a comprehensive program in all areas of vocational-technical education, including administration and supervision. Thus, it is one of the first programs of its kind to produce teachers and administrators with master's and doctor's degrees who are keyed into the problems of vocational education at all levels.

The growing emphasis on postsecondary occupational education makes mandatory the development of leadership of the kind made possible by the Rutgers program. The development of similar efforts in other parts of the country must be encouraged.

In order to maintain the current level of instructional quality to the increasing postsecondary school population during the next 4 years, it has been noted that an additional 10,500 teachers would be needed nationally. In 1966, according to the U.S. Office of Education, the postsecondary school population was only 7.3 percent of the total vocational enrollment. This figure is totally inadequate in light of the manpower demand for paraprofessional workers with 2 years of postsecondary education. On the other hand, the figure does assume a quantum significance when one considers that only 5 years ago it was on the order of 2 percent.

Qualitative Considerations

Beyond the need for the construction of new facilities equipped with modern educational technology, and which is subsequently reflected in rising institutional costs, the academic program administrators must be concerned with the quality of teaching. An important prerequisite of a vocational-technical teacher is his employment or experience qualifications. His employment experience should be recent and valid to reflect current practices. He must have genuine teaching ability. Resources must be made available to constantly upgrade his methods and materials for teaching. Dunwoody Institute in Minneapolis has an exemplary program which provides their instructors frequent opportunities to work in industry to keep skills current while continuing as faculty members. In addition, postsecondary institutions should encourage staff members to maintain a close working relationship with industry in their field of specialization.

In New Jersey, existing postsecondary vocational programs have a student to teacher ratio of approximately 21 to 1. In new programs, that ratio is reduced to 14 to 1, although it is uncertain this ratio can be maintained as such programs accelerate. It would, however, be highly desirable to emulate the former figure at the national level. It is difficult to see how this can be accomplished at an acceptable cost, however, if the organizational structures of our institutions remain unaltered.

Differentiated Staffing

As the teacher increases his technical competence and matures in his professional abilities, the traditional hierarchical lines of authority tend to blur. Along with an increase in competence is the need for the teacher to have a larger voice in the decisionmaking process in education. Since there exists within education a broad spectrum of professional levels and areas of interest, it is logical to consider changing the organizational structure of educational institutions to take advantage of their human resources. Other areas of our society have long used the team approach for the efficient resolution of complex tasks, and it has proved highly successful.

The organizational team concept within education, often termed "differentiated staffing," is being tried in a number of institutions. Early studies indicate that, if properly applied and administered, differentiated staffing shows excellent promise of enhancing teaching efficiency.

In describing this concept, the actual titles of the instructional staff are more or less irrelevant. What is important, however, is the function each performs within the team effort.

In his paper, "A Differentiated Teaching Staff," Dwight W. Allen provides the following job discriptions for four distinct categories of staff:

1. *The Associate Teacher* has a compensation range of 10 steps between $5,000 and $7,000. He has at least an A.B. degree and can be thought of as a *Doer* who carries out curriculum developed by more senior members of the staff.
2. *The Staff Teacher* has a salary range of $7,000 to $9,000 arranged in five annual increments. Typical academic preparation would be a fifth year of college. He is described as an *Illustrator* who works with the curriculum as it has been developed in general, but illuminates it with different illustrations and enriches it in many ways.
3. *The Senior Teacher* with a salary of $9,000 to $12,000 in four increments. He would have an M.A. degree and would have considerable responsibility in shaping the *curriculum concepts.*
4. The highest level might be designated *The Professor* with a salary range from $12,000 to $18,000 in four steps. He would have a primary role in long-term *curriculum development and planning* and would anticipate the long-term effects of sociological trends upon education.

Considerable encouragement should be given to the development and evaluation of the differentiated staff concept in a postsecondary vocational setting. Utilization of professional staff resources in this manner could help ameliorate the anticipated shortages of competent postsecondary vocational teachers during the next decade, and at the same time it would have a mitigating effect on the accelerating cost of education.

Community Participation

Peripheral to institutional faculty resources, but having a direct bearing upon them, are those of the surrounding industrial community. In order to be truly responsive to the manpower requirements of the area, the educational administrator must seek out and develop opportunities to expand the educational experience of students by exposing them to actual job settings. A typical example of such a program was developed by the Department of Vocational-Technical Education at Rutgers in 1966, with the initiation of the Cooperative Occupational Preteaching Experience Program (COPE) for the training of trade and industrial teachers.

In this program, the cooperative work aspect is based on 5,000 hours of supervised work experience in the trade or occupational specialty the student is preparing to teach. During this work experience, he attends the evening degree college where he receives certification, passes an occupational competency examination, and finally earns a B.S. degree. During this time he will have had 30 months of supervised work experience.

The Ford Foundation, in order to encourage this program's expansion, and to promote the involvement of universities and industry with occupational education, partially funded COPE for the fiscal years of 1967–1970 together with a number of other programs structured along slightly different lines. The support was instrumental in pointing the way for the action that Congress subsequently took under part D, title IV of the Higher Education Act of 1965, which included authorization and, later, appropriation of funds for cooperative education programs.

As early as 1907 in this country, cooperative work experience has been the principal ingredient for lending credibility to occupational education and providing the motivational stimulus to the learning process.

Morale of Vocational Educators

The esteem with which occupational educators are held by the educational generalists, while seldom reported, is of considerable import in determining both morale and efficacy. In shop-talk sessions, the term most frequently heard in their own evaluation of their standing among the generalists is "second-class citizen." Historically, reasons may be found which explain, although not justify, this appellation and most are of an apocryphal nature.

Then, too, there may be some element of supersensitivity on the part of the occupational educator. He may feel that others consider him having entered education by the back door.

Whatever the reason, the feeling does exist, and even to some extent among professional vocational educators within institutions of higher learning. Whatever the causes which engender this feeling, they must be somehow erased or potential teachers will be deterred from entering the vital field of vocational education.

Conclusion

If the products of higher education form the head of society, then those of the occupational areas constitute its body. Even the most chauvinistic advocate of the former would feel uncomfortable stating that a disembodied head was a viable organism. Yet, traditional education has historically stressed that the apotheosis of learning was college and the attainment of a degree. And, the preponderance of elementary and secondary education has been so structured.

The demands of industry will not be denied. More and more entry level jobs are shifting from a 12th-grade education to two years of postsecondary training. If the public institutions do not fill the need, then industry will have to fill the educational vacuum. The current percentage of those entering into public postsecondary vocational education is, from the standpoint of anticipated manpower demands, inadequate. Industry is far from indifferent to the prospect of insufficient manpower. Because of the increasing amount of public funds available to private agencies for educational purposes, many corporations are beginning to acquire holdings that will provide an impressive education and training capability.

The essential facts are that, of the entire working force, less than 15 percent have baccalaurate or advanced degrees. The balance are employed in occupational areas where the formal education required of the average worker is shifting upward at an increasing rate. A 12th-grade education soon will no longer suffice. The great body of our working force will soon require 1 to 2 years of postsecondary training to be considered for the jobs in our technical economy. Comprehensive and unified planning is required at the local, State, and national levels to insure an adequate supply of professional occupational educators to fill the needs. Additional faculty must be found for new and expanding institutions. Administrators must be sure that technical and teaching skills are relevant to the needs of the student population.

In order to attract the graduates of technical and business colleges to teaching, restrictive credentials barriers must be broken when these tend to protect the system rather than serve the student. The rewards of teaching must be made competitive with those of industry in all respects if education is to attract the cream of industry rather than its dropouts.

New experiments must be devised to determine the optimum use of professional staff within the organizational framework of postsecondary institutions. Close liaison must be maintained with the surrounding community and industry to insure that the occupational courses are both socially and economically relevant. To accomplish this, Federal and State laws that establish the economic incentives, and help to shape and promote educational philosophy, must be kept dynamic, flexible and continually responsive to the lessons being learned from experimental programs. It is only through this kind of self-examination, adaptability and willingness to accept the proven and discard the unworkable that the manifold challenges of today's technical society can be met.

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Public Postsecondary Occupational Education in the United States

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I. INTRODUCTION

Among the more significant developments in education in the United States in recent years has been the growth and development of various postsecondary programs below the baccalaureate level, designed as occupational education. There are many interrelated reasons for this growth and development. The increasing sophistication required by an advancing technology has called for a more skilled and knowledgeable labor force than has been needed in the past. The diminishing demand for unskilled and semiskilled labor with an accompanying increased demand for skilled and technical labor has meant that successful employment must depend on more education and training than the traditional education system could provide. Not only must people be able to enter the labor market at higher levels of skill and knowledge than has been true before, but they must also have the capacity to develop as these technology demands become ever higher.

The affluence resulting from the general industrial advances has produced a new level of wealth, both private and public, which has fostered the increasing commitment to education beyond high school. Some form of higher education is seen as a desired end in itself by growing numbers of people. This growth of interest in higher education is not, however, being accompanied by a proportional increase in the number of people who successfully pursue degree programs, nor by a proportional increase in the ability of traditional 4-year colleges and universities to accommodate all those who might wish education beyond the high school.

Historically the educational system was structured in a way implying that there were categories of people who should fit into fixed terminal points. Completion of high school was seen as the probable terminal point for the vast majority, with a 2-year degree being the next higher alternative available for a small minority. The junior college movement has served as a partial correction for this situation. The new variable-length postsecondary occupational programs should make it possible to more realistically serve the needs of students with varying desires and capacities as well as providing the levels of skill and knowledge needed in the labor force.

In addition to providing a system which is better able to serve the needs of high school graduates, a system is needed which can serve the needs of those who are being made ineffective or "obsolete" by an advancing technology. Few people can enter the labor market with skills which will adequately serve them for a lifetime of employment. Many people need regular upgrading in their job skills. Often, this upgrading must be seen as a public responsibility.

There are also large numbers of adults unable to find employment at a level necessary for an acceptable standard of living. Further, many are employed in jobs which require little or no skill and yield a correspondingly low income. The needs of these people must be met if the emerging systems are to be considered successful.

II. SYSTEMS OF POSTSECONDARY OCCUPATIONAL EDUCATION

Under the impetus provided by Federal legislation, as well as the desire to serve the needs of people and industry, individual States have been engaged in efforts to provide adequate systems of postsecondary occupational education. These efforts have taken place with limited precedent and under potentially conflicting sources of guidelines for development.

In general, all education beyond high school has been considered "higher education" and the legitimate concern of State bodies or departments governing colleges and universities, with their strong tradition of general rather than applied education. On the other hand, historically, education specifically intended as job-entry preparation has been the concern of vocational educators in the secondary systems. This has meant that, in many States, postsecondary occupational education has developed along two or, in some cases, more lines of control. At present there is virtually no evidence which would provide a basis for evaluating the relative merits of the different systems which have been developed.

Postsecondary occupational education is supported by the U.S. Office of Education, Division of Vocational and Technical Education, in institutions which are classified into four categories: (1) postsecondary technical vocational schools, (2) community or junior colleges, (3) universities or colleges, and (4) combination secondary-postsecondary vocational technical schools.[1]

In 1966, there were 1,020 such institutions in the United States. Two-thirds of these were institutions solely involved

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[1] U.S. Office of Education, *Vocational and Technical Education: Annual Report*, Fiscal Year 1966 (Washington: U.S. Government Printing Office, 1968), p. 82.

TABLE 1—*Public Postsecondary Occupational Education Institutions, by Type, and Estimated College Age Population, for Regions, Fiscal Year 1966*

Region	Institution						
	Postsecondary Technical Vocational School	Community or Junior College	University or College	Combination Secondary-Postsecondary Vocational Technical School	Total	Estimated 18–22 Year Old Population (1968)* (1,000's)	Institutions Per 100,000 18–22 Year-Old Population
United States	289	385	165	181	1,020	16,771	6.1
Northeast	52	58	14	23	147	3,684	4.0
New England	18	3	2	2	25	904	2.8
Middle Atlantic	34	55	12	21	122	2,780	4.4
North Central	90	83	32	64	269	4,495	6.0
East North Central	83	43	11	14	151	3,174	4.8
West North Central	7	40	21	50	118	1,321	8.9
South	129	103	19	84	335	5,660	5.9
South Atlantic	102	45	8	18	173	2,749	6.3
East South Central	15	17	2	30	64	1,211	5.3
West South Central	12	41	9	36	98	1,700	5.8
West	18	141	100	10	269	2,932	9.2
Mountain	7	30	17	6	60	714	8.4
Pacific	11	111	83	4	209	2,218	9.4

Source: U.S. Office of Education, *Vocational and Technical Education: Annual Report, Fiscal Year, 1966* (Washington: U.S. Government Printing Office, 1968), p. 82.

*Based on the Bureau of the Census, *Current Population Reports: Population Estimates.* "Estimates of the Population of States, by Age," Series P–25, No. 420 (Washington: U.S. Government Printing Office, April 17, 1969)

TABLE 2—*Percent Distribution of Type of Institution Within Region, Fiscal Year 1966*

Region	Institutions				
	Postsecondary Technical Vocational School	Community or Junior College	University or College	Combination Secondary and Postsecondary Vocational Technical School	Total
United States	28.3%	37.7%	16.2%	17.8%	100.0%
Northeast	35.4	39.5	9.5	15.6	100.0
New England	72.0	12.0	8.0	8.0	100.0
Middle Atlantic	27.9	45.1	9.8	17.2	100.0
North Central	33.4	30.9	11.9	23.8	100.0
East North Central	55.0	28.5	7.3	9.2	100.0
West North Central	5.9	33.9	17.8	42.4	100.0
South	38.5	30.7	5.7	25.1	100.0
South Atlantic	59.0	26.0	4.6	10.4	100.0
East South Central	23.4	26.6	3.1	46.9	100.0
West South Central	12.2	41.8	9.2	36.8	100.0
West	6.7	52.4	37.2	3.7	100.0
Mountain	11.7	50.0	28.3	10.0	100.0
Pacific	5.3	53.1	39.7	1.9	100.0

Source: Table One

in 2-year, postsecondary programs (postsecondary technical vocational schools and community or junior colleges). Table 1 presents the distribution by type of school and region, and table 2 the percent distributions of types within region. In the United States as a whole there are 6.1 schools per 100,000 population age 18-22 (estimated), but this varies from region to region.[2] New England and the Middle Atlantic States have 2.8 and 4.4 schools, respectively, per 100,000 potential population while the Mountain and Pacific States have 8.4 and 9.4, respectively. The North Central and Southern States are near the national average.

The previously mentioned variations in the systems of postsecondary occupational education can be noted in the percent distributions in table 2. The majority of schools in New England and the East North Central and South Atlantic States are postsecondary technical vocational schools, while in the Western States community or junior colleges constitute the majority. In the other regions there is some distribution among the types with the community or junior college and combination schools most frequently observed.

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[2] See appendix A.

TABLE 3.—*Public Postsecondary Occupational Education Institutions Participating in Federally Sponsored Student Assistance Programs, by Region and Type of Program, 1968-69*

Region	Number of Institutions Participating in							
	NDSL Only	CWS Only	EOG Only	NDSL and CWS	NDSL and EOG	CWS and EOG	NDSL, CWS and EOG	Total
United States	136	154	21	94	142	119	1,438	2,104
Northeast	34	33	11	20	46	29	369	542
New England	10	10	5	8	19	10	132	194
Middle Atlantic	24	23	6	12	27	19	237	348
North Central	41	34	6	24	50	30	378	563
East North Central	28	23	4	14	32	23	181	305
West North Central	13	11	2	10	18	7	197	258
South	46	51	3	34	40	30	482	686
South Atlantic	23	25	2	15	26	11	233	335
East South Central	16	13	1	7	9	6	114	166
West South Central	7	13	0	12	5	13	135	185
West	15	36	1	16	6	30	209	313
Mountain	2	3	0	3	1	3	49	61
Pacific	13	33	1	13	5	27	160	252

SOURCE: U. S. Office of Education, *Financial Aid for Higher Education* (Washington: U. S. Government Printing Office, 1968)

The cost to the student of postsecondary occupational programs varies a great deal from State to State. In Louisiana, for instance, there are no tuition or fees and only a refundable book deposit is required (all amounts are for in-State students unless otherwise indicated). In many States (e.g., Connecticut, Hawaii, North Carolina, South Carolina, Virginia), the cost is between $25 and $50 a semester for tuition, with a small additional amount required for fees. The tuition charged goes as high as $140 a semester (Kentucky), and perhaps higher, with several other States having tuitions in excess of $100 per semester (e.g., Idaho, Massachusetts, and Oregon). Frequently the occupational curriculum does not lend itself to standard term tuition (semester of year) and therefore a number of States charge on a credit hour basis. These charges range from approximately $2.50 to $7 per hour. Charges for postsecondary occupational programs are sometimes complicated by the fact that institutions operate with a significant amount of local funding, in addition to Federal and State support. Such is the case in Oregon and Wyoming, for example. In such cases, tuition is based on residence in the district of control, in-State but out-of-district, and out-of-State. In Oregon, the in-district tuition ranges from $165 to $270 a year; the in-State, out-of-district, from $240 to $337.50; and the out-of-State, from $300 to $600 a year. The estimated average charge for tuition and fees in public 2-year institutions in 1968–69 was $121 for the academic year.[3] Obviously, on the basis of the data from the few States cited, there is a great deal of variability around this average.

The U.S. Office of Education listed 2,104 institutions offering postsecondary occupational programs as participants in federally sponsored student assistance programs in 1968-69.[4] The three primary programs involving institutional participation are the National Defense Student Loan Program (NDSL), the College Work-Study Program (CWS), and Educational Opportunity Grants (EOG). The Federal Government provides 90 percent of the funds for NDSL, 80 percent for CWS, and 100 percent for EOG. Over two-thirds (68.3 percent) of those institutions which are participating offer all three programs, while 16.9 percent offer two of the programs (see table 3). Among the 311 institutions which offer only one program, 154 participate in CWS, 136 in NDSL and 21 in EOG. In addition to these three programs, students in postsecondary occupational programs are eligible for loans under the Guaranteed Loan Program.

There is a great deal of variation from State to State in the extent to which State, local, and private sources of financial assistance are available. Several States (e.g., Kentucky, North Carolina, and Virginia) have scholarship and loan funds financed out of each State's general revenue. Some assistance is available from private foundations and alumni groups, though this is not extensive and tends to be very localized. The available data do not indicate anything on the extent to which these programs are being used nor the characteristics of students using them. Because of this lack, it becomes difficult to judge the adequacy or inadequacy of the programs.

The impression made by various State publications as well as U.S. Office of Education publications, however, is that the combination of relatively low cost and easily available assistance programs makes it unlikely that many people are unable to take advantage of postsecondary occupational programs for financial reasons. This, of course, says nothing of the extent to which the potential population is aware of these things, which is probably a much more crucial matter than the issue of cost-assistance.

There does not appear to be a consistent national pattern of the availability of job placement services to students in postsecondary occupational programs. In some States (e.g., Louisiana) there is apparently no systematic program for securing employment for graduates. But in other States, each institution has a program not only for finding jobs for graduates but also for finding jobs for students while they are in school. The data suggest that most postsecondary occupational education institutions are extremely sensitive to the needs of employers in the areas they serve. This sensitivity increases the likelihood that the programs available to students will be those for which employment is available. This does not, of course, necessarily result in the student's being aware of a full range of opportunity, nor does it assure the ideal placement.

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[3] U.S. Office of Education, *Digest of Educational Statistics.* (Washington: U.S. Government Printing Office, 1968.)

[4] U.S. Office of Education, *Financial Aid for Higher Education.* (Washington: U.S. Government Printing Office, 1968.)

III. THE STUDENTS

Table 4 gives the enrollment figures for 1966 by type of program within region, and table 5 the percent distribution of programs within region. Although traditionally vocational education has tended to have a concentration in agriculture and home economics, these two areas account for just under 2 percent of the total national postsecondary enrollment. The Middle Atlantic States have the highest combined enrollment in these categories, with 7.2 percent. Distributive occupations are the third smallest category with no region having a large percentage of its enrollment in this area. The health occupations show a variation among regions with a fairly large percentage in New England (21.7 percent), and the East South Central States (28 percent), but fewer than 4 percent in the Pacific States. Office and technical courses constitute a consistently high percentage of enrollment across all regions, with the exception of the East South Central States, where the office category accounts for only 14.5 percent of the enrollment, and the Pacific States, where the technical category accounts for only 13.3 percent of the enrollment.

For the United States as a whole, the average occupational enrollment per institution was 431.9 students (see table 6). However, without the very high per institution enrollment in the Pacific States (1,044.2), this average drops to 274.0. The averages in the West North Central and East South Central

TABLE 4.—*Enrollment in Public Postsecondary Occupational Education Classes, by Program and by Region, Fiscal Year 1966*

Region	Agriculture	Distributive	Health	Home Economics	Office	Technical	Trade and Industry	Total
United States	5,837	15,741	36,245	2,652	164,896	99,727	115,393	440,491
Northeast	2,031	1,720	6,737	610	15,166	14,371	2,290	42,925
New England	181	65	1,893	—	2,113	3,244	1,215	8,711
Middle Atlantic	1,850	1,655	4,844	610	13,053	11,127	1,075	34,214
North Central	1,010	3,691	8,305	673	24,505	15,830	17,797	71,811
East North Central	854	3,083	5,989	667	21,116	11,806	12,577	56,092
West North Central	156	608	2,316	6	3,389	4,024	5,220	15,719
South	744	2,691	11,552	564	23,853	36,300	14,693	90,397
South Atlantic	691	2,222	4,753	564	13,310	15,355	3,929	40,824
East South Central	41	240	3,380	—	1,747	2,855	3,815	12,078
West South Central	12	229	3,419	—	8,796	18,090	6,949	37,495
West	2,052	7,639	9,651	805	101,372	33,226	80,613	235,358
Mountain	491	192	1,354	278	4,802	4,233	5,761	17,111
Pacific	1,561	7,447	8,297	527	96,570	28,993	74,852	218,247

SOURCE: U.S. Office of Education, *Vocational and Technical Education: Annual Report, Fiscal Year 1966* (Washington: U.S. Government Printing Office, 1968)

TABLE 5.—*Percent Distribution of Enrollment by Program Within Region, Fiscal Year 1966*

Region	Agriculture	Distributive	Health	Home Economics	Office	Technical	Trade and Industry	Total
United States	1.3%	3.6%	8.2%	.6%	37.5%	22.6%	26.2%	100.0%
Northeast	4.7	4.0	15.7	1.4	35.4	33.5	5.3	100.0
New England	2.1	.7	21.7	—	24.3	37.3	13.9	100.0
Middle Atlantic	5.4	4.8	14.2	1.8	38.2	32.5	3.1	100.0
North Central	1.4	5.1	11.6	.9	34.2	22.0	24.8	100.0
East North Central	1.5	5.5	10.7	1.2	37.7	21.0	22.4	100.0
West North Central	1.0	3.9	14.7	.0	21.6	25.6	33.2	100.0
South	.8	3.0	12.8	.6	26.4	40.1	16.3	100.0
South Atlantic	1.7	5.4	11.6	1.4	32.6	37.7	9.6	100.0
East South Central	.3	2.0	28.0	—	14.5	23.6	31.6	100.0
West South Central	.0	.6	9.1	—	23.5	48.3	18.5	100.0
West	.9	3.2	4.1	.3	43.1	14.1	34.3	100.0
Mountain	2.9	1.1	7.9	1.6	28.1	24.7	33.7	100.0
Pacific	.7	3.4	3.8	.2	44.3	13.3	34.3	100.0

SOURCE: Table Four

States are below 200 per institution; between 200 and 300 in the Middle Atlantic, South Atlantic, and Mountain States; and between 300 and 400 in New England, the East North Central, and West South Central.

TABLE 6.—*Enrollment Per Institution, by Region, Fiscal Year 1966*

Region	Number of Institutions	Postsecondary Occupational Enrollment	Average Enrollment Per Institution
United States	1,020	440,491	431.9
Northeast	147	42,925	292.0
New England	25	8,711	348.4
Middle Atlantic	122	34,214	280.4
North Central	269	71,811	267.0
East North Central	151	56,092	371.5
West North Central	118	15,719	133.2
South	335	90,397	269.8
South Atlantic	173	40,824	236.0
East South Central	64	12,078	188.7
West South Central	98	37,495	382.6
West	269	235,358	874.9
Mountain	60	17,111	285.2
Pacific	209	218,247	1,044.2

SOURCE: Tables 1 and 4

These figures suggest that the institutions providing postsecondary occupational education are not being fully utilized. However, it must be noted that only 289 of the 1,020 institutions are devoted solely to postsecondary education (community or junior colleges and universities or colleges) or occupational education at the secondary level (combination secondary-postsecondary vocational technical schools), as well as postsecondary occupational programs.

The data from these sources (programs reporting to the Division of Vocational and Technical Education) for more recent periods are not yet available. However, data from 1968 are available on higher education enrollments in occupational programs below the baccalaureate level which are comparable. Total enrollments, in table 7, should include all public institutions involved in postsecondary occupational programs with exception of the combination secondary-postsecondary vocational technical schools. While comparisons with 1966 data must be drawn with caution since the data are not identical, it is well to note the apparent increase in enrollment in the 2-year period.

Nationally, the 1968 enrollments are 22.5 percent above the 1966 figures. There are, however, more dramatic indications in looking at the various geographic areas. The most obvious points are the extremes of New England and the West South Central States. In 1966, the New England States had the smallest absolute enrollment, but, with a 2-year increase of 203.6 percent, enrollment is now near the national average in terms of proportion of the potential population. The apparent *decrease* of 25 percent in the West South Central States places them at about one-half the national figure of proportion of potential population. The Pacific States had a moderate increase of 11.1 percent, but this seems reasonable in light of the extent to which the potential population is involved. The East North Central and South Atlantic States had sizable increases (57.4 percent and 67.5 percent, respectively); the West North Central a moderate 29.2 percent; and the remaining areas had little or no increase (less than 1 percent in the Middle Atlantic to 9.4 percent in the Mountain States).

While the increases in enrollment are in some cases notable, the total situation of enrollment as a proportion of the potential population indicates the probable need for much more growth. Nationally, just over 3 percent of the potential population is enrolled. The figure is this high only because of the Pacific States' large enrollment at a rate of 10.9 percent of the potential (the Pacific States account for about 13 percent of the potential population and almost 45 percent of the total enrollment). Figures for the Middle Atlantic and East South Central States are just over 2 percent and are around 2 to 3 percent for the remaining regions.

TABLE 7.—*Opening Fall Enrollment in Occupational Programs in Public Institutions of Higher Education, and Estimated Potential Population, by Region, 1968*

Region	Estimated 18–22 Year Old Population (1,000's)	Fall Enrollment in Occupational Programs	Enrollment Per 100,000 Potential Population	Apparent Rate of Increase: 1966 to 1968
United States	16,771	539,819	3,218.8	22.5%
Northeast	3,684	60,849	1,651.7	41.8
New England	904	26,450	2,925.9	203.6
Middle Atlantic	2,780	34,399	1,237.4	.5
North Central	4,495	108,603	2,416.1	51.2
East North Central	3,174	88,295	2,781.8	57.4
West North Central	1,321	20,308	1,537.3	29.2
South	5,660	109,155	1,928.5	20.8
South Atlantic	2,749	68,397	2,488.1	67.5
East South Central	1,211	12,653	1,044.8	4.8
West South Central	1,700	28,105	1,653.2	−25.0
West	2,932	261,212	8,909.0	11.0
Mountain	714	18,716	2,621.3	9.4
Pacific	2,218	242,496	10,933.1	11.1

SOURCE: U.S. Office of Education, *Opening Fall Enrollment in Higher Education, 1968: Part B-Institutional Data* (Washington: U.S. Government Printing Office, 1969)

Table 8.—*Sex and Attendance Status of Students in Occupational Programs in Public Institutions of Higher Education by Region, Fall 1968*

Region	Male		Female		Total	Percent Male	Percent Part Time
	Full Time	Part Time	Full Time	Part Time			
United States	158,578	175,249	89,758	116,234	539,819	61.8%	54.0%
Northeast	18,127	22,223	8,129	12,370	60,849	66.3	56.9
New England	9,159	9,630	3,804	3,857	26,450	71.0	51.0
Middle Atlantic	8,968	12,593	4,325	8,513	34,399	62.7	61.4
North Central	35,371	36,787	17,929	18,516	108,603	66.4	50.9
East North Central	26,902	32,807	13,062	15,524	88,295	67.6	54.7
West North Central	8,469	3,980	4,867	2,992	20,308	61.3	34.3
South	44,681	26,450	24,071	13,953	109,155	65.2	37.0
South Atlantic	27,106	16,335	15,516	9,440	68,397	63.5	37.7
East South Central	5,591	2,156	3,487	1,419	12,653	61.2	28.3
West South Central	11,984	7,959	5,068	3,094	28,105	71.0	39.3
West	60,399	89,789	39,629	71,395	261,212	57.5	61.7
Mountain	7,035	4,205	4,039	3,437	18,716	60.1	40.8
Pacific	53,364	85,584	35,590	67,958	242,496	57.3	63.3

Source: U.S. Office of Education. *Opening Fall Enrollment, op. cit.*

While part of this potential population is enrolled in degree programs (35 to 40 percent), less than half of these are likely to complete such programs. This means that a great majority of young people are entering today's labor market with little or no job entry preparation at the postsecondary level provided by public institutions. Certainly, some of these receive training through proprietary institutions which offer occupational training. These proprietary institutions have sizable enrollments in the business education fields. The belief exists that the majority of people receiving secretarial training are getting this training in proprietary institutions. However, the total probably does not appreciably alter the size of the potential population available to the public institutions.

In 1968, there were slightly more than a half million students in public institutions of higher education pursuing occupational programs. As with higher education in general, a majority of these students were male (61.8 percent), with very little regional variation in the sex ratio. In the Pacific States, 57.3 percent of the students were male, and in the New England and West South Central States, 71.0 percent. The other seven areas ranged between 60.1 percent and 67.6 percent (see table 8).

There is more variation among regions in the proportion of students enrolled as part-time students. Nationally, 54 percent of the students are enrolled on a part-time basis. But, for the regions, this ranges from 28.3 percent in the East South Central States to 63.3 percent in the Pacific States, followed by the Middle Atlantic States at 61.4 percent. New England and the East North Central, at 51.0 percent and 54.7 percent, are near the national figure. The remaining four areas range between 34.3 percent and 40.8 percent. The percent of first-time students who are part-time is considerably lower than the percent of all students who are part-time. This is true nationally as well as in all but one of the areas (the Mountain States). The data do not permit an adequate explanation for this difference, though the two most obvious possibilities should be examined. These are (1) part-time students are more likely to continue in programs than are full-time students, or (2) after initial enrollment, full-time students are likely to change their status to part-time due to finding work, or other reasons. A third possibility—that of marked change in the characteristics of students—seems less likely than the other possibilities.

There has been a very limited amount of work done on the characteristics of students in postsecondary occupational programs or on those of students planning to pursue such programs. A study of 3,117 high school students in the State of Washington, done in 1965–66, provides some interesting information on those planning some form of postsecondary occupational education.[5] On virtually all of the characteristics examined, those students planning on some postsecondary occupational programs constitute a "middle ground" between the college-bound and those planning no education beyond high school. In the high school experience itself, those planning on occupational education have been academically more successful than the "high school only" group, but less successful than the college-bound group; they were more active in and satisfied with their high school life than the "high school only," but less than the college-bound; and they have higher academic images than the "high school only," but lower than the college-bound. High school has not completely alienated those planning on postsecondary occupational programs, but they apparently are not seeking education for its own sake and do not want to extend their education beyond the time required for a practical, applied program. On the other hand, those who plan no education beyond high school, not even an occupational program, can be seen as those for whom the educational experience has been one of limited or no reward and one which they do not plan on extending any longer than necessary.

The students planning on postsecondary occupational programs also represent "middle ground" with regard to family backgrounds and the characteristics of their friends. As would be expected, the college-bound represent the highest status in terms of family income, parental education and father's occupation; the "high school only," the lowest. This, of course,

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[5] Roy T. Bowles and Walter L. Slocum, "Social Characteristics of High School Students Planning to Pursue Post High School Vocational Training," (Washington: U.S. Office of Education, Bureau of Research, 1968).

TABLE 9.—*Formal Awards in Public Institutions of Higher Education in Organized Occupational Curriculums, By Length of Program, Sex, and Curriculum Category, 1966–67*

Curriculum	Two But Less Than Four Years			One But Less Than Two Years			Total		
	Total	Male	Female	Total	Male	Female	Total	Male	Female
A. Engineering	14,147	13,905	242	1,851	1,791	60	15,998	15,696	302
B. Science	1,856	1,711	145	349	346	3	2,205	2,057	148
C. Health	10,099	2,888	7,211	4,821	198	4,623	14,920	3,086	11,834
D. Business	16,320	7,726	8,594	2,327	613	1,714	18,647	8,339	10,308
E. Other	20,112	11,088	9,024	1,979	1,449	530	22,091	12,537	9,554
Total	62,534	37,318	25,216	11,327	4,397	6,930	73,861	41,715	32,146

SOURCE: U.S. Office of Education, *Associate Degree and Other Formal Awards Below the Baccalaureate, 1965–66 and 1966–67.* (Washington: U.S. Office of Education, National Center for Educational Statistics, 1969.)

raises the question of the financial ability of students to pursue postsecondary occupational or college programs. Realistically, students whose families can offer no financial assistance and students whose families expect and need financial assistance from the student cannot make plans which involve financial commitments.

There is generally perceived support in the attitudes of friends of those planning postsecondary occupational programs. They have fewer friends who have dropped out of school than do the "high school only," but more than the college-bound. Their friends were more likely to have positive attitudes toward more education than the "high school only," less likely than the college-bound. This phenomenon, obviously, is circular in that those in each category tend to select friends who have attitudes similar to their own. In turn, the friends' attitudes influence and reinforce their own attitudes. Certainly the attitudinal environment in which a student makes his post high school plans cannot be ignored. However, it should be noted that this is not a simple "cause and effect" relationship.

As was pointed out earlier, students have varying capacities and needs for education beyond high school and they make plans under varying family background and social contexts. Postsecondary occupational programs provide an additional point—between stopping with a high school education and pursuing a college degree—which can enter into student plans. However, knowing that the school experience, family background and social environment affect plans is only a beginning. Much more information is needed on the relative contribution of all of these factors and their individual contributions under varying conditions.

While it is probably normal for most students entering postsecondary occupational programs to come directly from high school, there are two additional sources which cannot be disregarded.[6] Though they are not being used to the extent they should be, postsecondary occupational programs probably represent a logical answer to a large number of the thousands who start but never finish college. A partial college education offers limited job entry assistance, and no doubt many college dropouts do make use of the 1- and 2-year programs available. Data on the percent of postsecondary enrollment previously in degree programs and the percent of degree program withdrawals who enter postsecondary occupational programs are not available. This information could be most useful, particularly for counseling done at the time of withdrawal from college.

A second potential source of students is industry itself. For many people, it is necessary to have some "real world" work experience before a satisfactory plan for the future can be made. In addition, work experience is frequently the best way for a person to discover what he does not know and what he needs to learn. Often, industry encourages its employees to pursue educational programs which will increase their usefulness to industry, at times to the point of paying for the cost of the program. It is rare to find an industry which will not be going through some technological modifications and equally rare to find employees capable of full production under new circumstances without some additional training or education. As with the college dropout, data on the extent to which this represents a source of students are not available.

IV. THE OUTCOME

In 1966-67, public institutions of higher education in the United States conferred over 70,000 awards for the completion of occupational programs below the baccalaureate level (see table 9). Almost 85 percent of these were for programs of at least 2 years, but less than 4 years, duration. Only in the health occupations were there a significant proportion of 1-year programs. Even there the figure was only 32 percent. Within certain specific occupational programs (forestry, dental assistant, and practical nursing), there were more 1-year than 2-year awards, but the predominant pattern was for the longer period. (For specific occupational programs under each of these categories, see table 10.)

As would be expected, there were significant sexual differences in the distribution of awards. The males dominated engineering and science, and the females, health and, to a lesser extent, business. For males, in both 1- and 2-year programs, business and commerce was the most frequent program, followed by industrial technology and mechanical technology in the 1-year programs and electrical and/or electronics technology and, again, mechanical technology, at the 2-year level. For females, at the 1-year level, practical nursing was the most frequent program, accounting for over 45 percent of the 1-year awards to females. This was followed by the 1-year secretarial

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[6] M. R. Graney, *The Technical Institute.* (New York: The Center for Applied Research in Education, Inc., 1964), Ch. VI, "The Individual and the Technical Institutes," pp. 87–111.

Table 10.—*Fields of Specialization, by Curriculum Category, 1966-67 (Based on Formal Awards for Organized Occupation Curriculums of at Least One But Less Than Four Years)*

- A. *Engineering Related*
  - Aeronautical technology
  - Architectural and Building technology
  - Chemical technology
  - Civil technology
  - Electrical and/or electronics technology
  - Industrial technology
  - Mechanical technology
  - Other
- B. *Science Related*
  - Agriculture
  - Forestry
  - Scientific data processing
  - Other
- C. *Health*
  - Dental assistant
  - Dental hygiene
  - Dental laboratory assistant
- C. *Health* (continued)
  - Medical or biological laboratory technician
  - Nursing, practical
  - Nursing, associate degree
  - Nursing, diploma program
  - X-ray technology
  - Other
- D. *Business Related*
  - Business and commerce
  - Secretarial
- E. *Other*
  - Educational
  - Fine, applied and graphic arts
  - Home economics
  - Bible study or religious work
  - Police technology or law enforcement
  - Miscellaneous

and dental assistant programs. At the 2-year level, the secretarial program was the most frequent selection, followed by the nursing diploma program, and business and commerce. These distributions suggest that enrollments reflect the traditional sexual identification of occupations which, though perhaps not rational, is probably realistic in terms of employment opportunities.

Comprehensive data are lacking on the extent to which the wide array of potential programs is represented at individual institutions. Data on awards indicate there is sufficient breadth in the types of programs which can be offered, but a casual examination of postsecondary institutions indicates a great deal of variation in the number of different offerings available to students. Frequently, institutions which offer postsecondary occupational education may have only a half dozen programs or, in some cases, less. On the other hand, there are many institutions which offer a very full range of programs.

On the basis of limited information, there does not appear to be a consistent pattern to these variations. The differences can be observed within States, or within regions, as well as for the country as a whole. In viewing this apparent variation in the availability of programs it must be remembered, as has previously been indicated, that often those institutions offering postsecondary occupational education have multiple functions and pressures to fulfill other obligations (e.g., academic programs, secondary vocational programs, etc.) which may require these institutions to place less emphasis on postsecondary occupational programs than seems desirable in terms of need.

Enrollment figures for programs and institutions can be deceptive in that entry into a program in no way assures that a student will remain until the intended knowledge and skills have been acquired. In the period 1966-68 in Pennsylvania community colleges, 58 percent of the students who entered associate degree or college parallel programs completed their programs or successfully transferred to institutions of higher education.[7]

This figure compares favorably with the completion rate of traditional 4-year institutions. However, as this population was not "postsecondary occupational" students, the data can be used only as an indication of 2-year schools' success. In Louisiana, the most recent data available indicate that only 16 percent of those who start postsecondary occupational programs complete these programs.[8]

It must be remembered that the primary motivation of students in occupational programs is probably very concrete and not easily associated with a certificate, diploma, or degree. The skill level sought by the student may be obtained without completing, in the institutions' terms, the program. "This means then, that these people, while entering [an occupation] prior to the completion of a full program, have completed a program; a program which they have chosen for themselves."[9]

Systematic followups of dropouts from postsecondary occupational programs are not available. The available information suggests that one of the main reasons for noncompletion is the availability of employment opportunities in the occupations for which students are training.

In those occupations for which manpower demand is great, employers find it economical to hire people with partial training. These people complete their training while being productively employed. With the data now available, it is impossible to say what the long range implications of this practice are for the students. It may or may not adversely affect careers. It seems, however, that the practice should be done with great planning, and there should be close cooperation between institutional and on-the-job training. It is possible that institutional training is excessive and that the skill level employers prefer is attained prior to completion. For some occupations, it may be necessary for employers to provide some initial training to new employees regardless of prior formal training. The special characteristics or processes of an individual business may make this so. Under such circumstances, employers may find it easier to take students with incomplete training, with less to "unlearn," and provide the final stages of training at the same time local practices are being taught. If this is in fact the case then there are obvious implications for institutional programs. It should be possible to make better use of institutional resources to the end of better serving students and employers.

There are some data available on the characteristics of people who left MDTA institutional training prior to completing programs.[10] While this would not be representative of postsecondary occupational students who do not complete programs, the information may provide some indications of the characteristics of those likely to withdraw from programs.

Among the MDTA trainees, males were more likely to withdraw than females and nonwhites were more likely to withdraw than whites. In 1968, 55 percent of the trainees were male, but 66 percent of the withdrawals were male.

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[7] Pennsylvania Bureau of Community Colleges, "Selected Student Information: Community Colleges," (Harrisburg: Department of Public Instruction, Commonwealth of Pennsylvania, January 1969).

[8] Communication from Paul B. Brown, Director, Research Coordinating Unit, Louisiana State Department of Education, Baton Rouge, June 20, 1969.

[9] Communication from Dr. B. E. Childers, Executive Secretary, Committee on Occupational Education, Southern Association of Colleges and Schools, Atlanta, Georgia, September 19, 1969.

[10] U.S. Office of Education, *Education and Training: A Chance to Advance.* (Washington, D.C.: U.S. Government Printing Office, 1969.)

Table 11.—*Followup of Postsecondary Occupational Education Enrollees, Fiscal Year 1967 (Status of Persons in October 1967)*

	Program							
	Agriculture	Distribution	Health	Home Economics (Gainful)	Office	Technical	Trades and Industry	Total
Number Completed Program	6,334	7,111	27,882	3,148	39,614	21,111	35,817	141,017
Percent Available for Placement	71.0%	47.4%	83.7%	69.7%	53.7%	59.2%	63.5%	63.7%
Percent of Those Available for Placement Placed in Field Trained or related	90.4%	73.5%	95.2%	83.2%	81.7%	92.4%	85.6%	87.8%

Source: Division of Vocational and Technical Education, "Fact Sheet: Vocational Education – Fiscal Year 1967 Data," (Washington: U.S. Office of Education, October 1968.)

Nonwhites made up 38 percent of the total enrollment, but 47 percent of the withdrawals. In addition, younger trainees and those with less previous education were more likely to withdraw. Fifty-three percent of the 1968 enrollment had less than a 12th-grade education, but 65 percent of the withdrawals were in this category. Persons 21 years old and younger made up 38 percent of the enrollment, but 46 percent of the withdrawals. It would not be in order to attempt interpretation of these data, particularly in light of the relatively small magnitude of difference. It is interesting to note that in 1968, while the overall completion rate for institutional trainees was 75 percent, for on-the-job trainees it was 85 percent. It is very likely that there are some people who need and should have occupational training who, for whatever reason, are not favorably disposed to the traditional education setting. There are important implications in this for postsecondary occupational programs.

While the completion rate may be less than desired in some cases, over 50 percent of those who do complete programs are employed either in the occupation for which they were trained, or a related occupation (see table 11). In 1967, 63.7 percent of those completing programs were available for placement. A majority of those not available for placement were continuing their education, with a sizable proportion entering the armed forces. Of those available for placement, 87.8 percent were employed either in the occupation for which they were trained or in a related occupation. For agriculture, health, and technical occupations, the figure was over 90 percent. Those trained in the distribution occupations were the least likely to be available for placement (47.4 percent) and, if available, the least likely to be employed in the occupation for which trained or a related occupation (73.5 percent). The general picture, however, indicates that training was realistic in terms of employment opportunities and the likelihood that trainees would accept appropriate employment when available.

V. FURTHER DATA NEEDS

Postsecondary occupational education in the United States is presently in its formative stages. It is still susceptible to modification and change without the resistances that might be found in more tradition-bound, well-entrenched programs. This will not be the case indefinitely, however. If reasons for change are known, efforts toward innovation and improvement should start as soon as possible. Many gaps remain, nevertheless, in the information required for a rational approach to these changes.

The systems developed by the States should be examined to find out which are superior, and why. This is not meant to imply that there should be, or is, a single, best way of organizing such programs. The possibility, however, should not be ignored.

The various programs should be examined to determine which provide a full range of programs which are likely to be of value to specific target populations. Concentrations in types of programs—either at the highly technical end or the semiskilled labor end—are not likely to be of as much service as those covering a wide gamut of occupational skills.

While cost factors should not be a significant negative factor in the availability of postsecondary occupational education, limited data are available on the extent to which financial aid programs are utilized and the characteristics of students using aid. Information is needed on the extent to which potential students are aware of the financial assistance available to them. Many persons, obviously, are not using the aid who should be and, perhaps, they are the ones who need it most. It is possible that one of the reasons for this is lack of information or inadequate information on such programs.[11]

More complete data are needed on the characteristics of students enrolled in postsecondary occupational programs, specifically their demographic characteristics, social characteristics, and academic backgrounds. While the idea of "universal opportunity" is one of the forces behind the development of postsecondary occupational programs, it cannot be determined from enrollment statistics whether we are approaching this ideal or not.

More information is needed on the extent to which these programs serve as an attractive alternative for those who withdraw from degree programs. This opportunity must be open and accessible to those who attempt but do not complete degree programs.

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[11] A study related to this problem is now underway at the Center for Occupational Education, North Carolina State University, under the direction of the author.

Information is also needed on the extent to which students are drawn from industry itself. The normal route, it appears, is enrollment immediately after high school. Sizable part-time enrollments strongly indicate that many students are working full time while taking courses. This, of course, does not mean that industrial employers are responsible for those seeking training, nor that the training constitutes attempts on the part of students to advance in their present occupations. Certainly, this is not always the case. More information is needed on the number and characteristics of students following various avenues of entry to these programs.

Selected data indicate that the completion rate in some of these programs may be alarmingly low. More precise information on completions is needed. Information is also needed on the relationship of completion rate to organizational structure and type of program. Studies should be conducted on the characteristics of students who do not complete programs, their reasons for withdrawing, and the effect withdrawal has on their subsequent employment experiences. If it is assumed that these programs are necessary and sufficient for job entry, then institutions which do not hold a student to completion have not fulfilled their potential service to the student or the areas they are designed to serve.

Occupational education, perhaps more than any other type of education, should make a readily observable difference in the life of the person who completes a program. It is intended to be practical, applied, and a direct service to students and industry. Extensive followup studies on the career patterns of graduates from these programs should be made. Their training should make them both better workers and better adjusted workers, and provide them with the basis for progression in an occupation.

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APPENDIX

Throughout this report the United States is defined to include the 50 States and the District of Columbia, but does not include the Commonwealth of Puerto Rico nor the outlying areas under U.S. jurisdiction. The regions are defined according to the U.S. Bureau of the Census classification as follows:

I. NORTHEAST
   A. New England: Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut.
   B. Middle Atlantic: New York, New Jersey, Pennsylvania

II. NORTH CENTRAL
   A. East North Central: Ohio, Indiana, Illinois, Michigan, Wisconsin
   B. West North Central: Minnesota, Iowa, Missouri, North Dakota, South Dakota, Nebraska, Kansas

III. SOUTH
   A. South Atlantic: Delaware, Maryland, District of Columbia, Virginia, West Virginia, North Carolina, South Carolina, Georgia, Florida
   B. East South Central: Kentucky, Tennessee, Alabama, Mississippi
   C. West South Central: Arkansas, Louisiana, Oklahoma, Texas

IV. WEST
   A. Mountain: Montana, Idaho, Wyoming, Colorado, New Mexico, Arizona, Utah, Nevada
   B. Pacific: Washington, Oregon, California, Alaska, Hawaii

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Private Vocational Schools: Their Emerging Role in Postsecondary Education

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The views expressed by the writer do not necessarily reflect policies or positions of the W. E. Upjohn Institute for Employment Research or of the Ford Foundation which financed a larger study of the schools.

I. INTRODUCTION

This study attempts to clarify the role of private vocational schools as one of the institutions providing postsecondary education. The principal topics include: estimated number of schools and students, types of occupational training, nature of instruction, student characteristics, and regulation and accreditation of the schools.

The general status of vocational education is considered initially in order to explain the still inadequate awareness and acceptance of the private vocational schools and their students. Finally, in a brief concluding section, a proposal is offered which seeks to enhance the equality of educational opportunity.

II. STATUS OF VOCATIONAL EDUCATION

Despite steadily growing enrollments in colleges and universities, the potential number of students who can benefit from instruction in private vocational schools will continue to be exceptionally large. The promising future of the schools is based upon at least two major conditions. First, only about one-fourth of all high school students are enrolled in a vocational education program. Second, less than 25 percent of all high school students ultimately complete a 4-year college program.

The expected advances in the use of private vocational schools are grounded in the demonstrated capacity of the schools to motivate and train students with various needs and interests for specific occupational objectives. Young persons lacking vocational qualifications, private employers, and several government agencies have shown the greatest appreciation of the schools' capabilities and have also made the most use of them. In general, however, educators and school counselors have been uninformed about and even antagonistic to the private vocational schools.

Since high school graduates and nongraduates will continue to enroll in vocational schools, it is important to consider some of the plausible reasons why key persons involved in advising such students have disregarded the schools. Insights into this paradox arise from (a) the current emphasis upon college education, and (b) the contrasting objectives of vocational schools and colleges.

J. B. Conant and other highly respected educators have been critical of the many parents who ignore the aptitudes and interests of their children and pressure them to pursue some form of higher education. Quite understandably, the school counselors typically reflect a community's interest in maximum college enrollment. The number of counselors in most schools is, moreover, inadequate, and the counselors who are available are unfamiliar with the needs of and the opportunities for students not headed for college. The net result of these conditions is that educational resources are not efficiently used and numerous cases of personal frustration and disillusionment occur.

While strongly favoring equality of educational opportunity, J. W. Gardner, former Secretary, HEW, has also stressed the desirability of providing superior vocational education, and he has accented the possibilities and importance of achieving "excellence" in all forms of education and work.

The preeminence given to college enrollment by educators, counselors, and parents is naturally related to the academic program and, perhaps even more, to the ultimate types of employment that college graduates are likely to secure. The liberal arts curriculum is an important educational component of colleges and universities. Such a curriculum may be a preparation or requirement for an occupationally oriented program, but students may also select the subjects for their intrinsic value. Even undergraduate curriculums that lead directly to employment (e.g., business administration or engineering) require some general education subjects. In contrast, vocational schools, particularly the private ones, offer hardly any subject matter that is not directed toward the ultimate requirements of a job; and the courses, usually less than 2 years in length, are not concluded by the conferring of a degree. The term "course" is used by private vocational schools to represent the entire training program. Comparatively few of the private vocational schools are actually able to confer an associate degree under current regulations in their States. In 1969 Pennsylvania, for example, began considering private vocational schools' eligibility to award an associate degree.

Private vocational schools differ from colleges and universities not only in subject matter taught but also differ in their financial structure. Colleges and universities, whether private or public, are overwhelmingly nonprofit, while the great majority of private vocational schools are profit-making, or more accurately, profit-seeking organizations.[1] This need not be noted *per se* as a distinguishing characteristic between the two types of institutions, but it has in fact been raised as an additional factor of comparison. However, it appears appropriate to focus less attention on the financial structure of an educational or training institution and, instead, to examine more closely student needs, the competence of instructors, and the nature of the programs.

This approach could lead to a clearer differentiation between the two types of institutions. Perhaps it would then be concluded that colleges and vocational schools are "noncompeting groups," to be evaluated on the basis of their comparative excellence in instructional programs and the performance of their graduates on the job. (Colleges and universities should naturally be supported in their search for excellence in those fields of study that are not directly related to ultimate employment.)

III. ESTIMATED NUMBER OF SCHOOLS AND STUDENTS

The first serious attempt to estimate the number of private vocational schools and to consider their programs was made in 1964. Clark and Sloan estimated that there were more than 35,000 schools, with an enrollment exceeding 5 million.[2] However, these figures included schools offering both vocational and leisure-time training programs.

The author's study on which this paper is based disclosed a total of 7,000 private schools limited to vocational education and serving 1.5 million students during 1966.[3] These conservative estimates were divided into four broad occupational categories as shown in table 1.

TABLE 1.

Occupational Category	Number of Schools	Percent of Schools	Number of Students	Percent of Students
Trade and Technical	3,000	42.4%	835,710	53.4%
Business	1,300	18.4	439,500	28.1
Cosmetology	2,477	35.0	272,470	17.4
Barber	294	4.2	15,876	1.0
	7,071	100.0%	1,563,556	99.9%

The above figures were based upon responses to a written questionnaire by 1,200 schools and supplemental information provided by associations of the four types of schools. The number of cosmetology and barber schools was exact because their respective associations conduct an annual census. In 1966, the United Business Schools Association had a membership of 500 schools offering secretarial, accounting, business administration, and other courses; and it maintained a record of 800 nonmember business schools. The National Association of Trade and Technical Schools (NATTS), established in 1965, had only 200 member schools, but the Association's mailing list was several times that number.

As previously shown, the majority of students attended trade and technical schools. Added to the enrollment in business schools, these two categories accounted for 80 percent of all students. However, the cosmetology and barber schools are quantitatively important, because they train most of the persons entering such occupations.

The data also revealed that the average annual enrollment in each type of occupational training school was rather small. Less than 5 percent of the schools enrolled more than 2,000 students annually. The average business school enrolled less than 350 students annually. This exceeded the average enrollment in the trade and technical schools by 20 percent and was much greater than the typical enrollments in the cosmetology and barber schools.

One explanation for the small size of most of these schools is related to the importance assigned to the practical, problem-solving aspects in the courses. It follows that only a short period of time is spent in large classrooms, and the costs of adequate space and machinery in shop and laboratory settings necessarily limit the size of a school building and its staff. Second, the schools are widely distributed geographically—often either located in cities with less than 100,000 persons or situated within sections of a large metropolitan area. A third reason is that the trade and technical schools (the primary focus of attention in this study) tend to train for single or related occupations. Nevertheless, collectively, the large number of highly specialized trade and technical schools offers the greatest diversity of courses.

Although most private schools operate on a year-round basis and offer both day and evening sessions, the capacity for expanding enrollment appears to be sizable. The possibilities for growth are primarily due to the under-utilization of staff and facilities in afternoon and evening classes. According to a survey of NATTS members, the schools were operating at only 60 percent of their capacity. On the basis of this estimate, all trade and technical schools could accommodate an additional one-half million students.[4]

Some of the salient features of the home study or correspondence schools must be at least noted, even though such schools undoubtedly merit a much more extensive survey.

The National Home Study Council, with a membership of 120 accredited schools, is the principal association for these schools. (Some of the schools have vocational school divisions similar to those considered in this study.) Accreditation is provided by the Council's Accrediting Commission, which is recognized by the U.S. Office of Education. There are also approximately 500 nonaccredited correspondence schools. Unlike the members of the National Home Study Council, the nonaccredited schools do not always require examinations and frequent "exchange" between school and student.

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[1] A decision by a judge of the U.S. District Court for the District of Columbia might lead to the establishment of many more proprietary colleges. The Middle States Association of Colleges and Secondary Schools, Inc., was found: (1) to be in restraint of trade, and (2) to deny constitutional due process by requiring applicants for accreditation to be nonprofit institutions. See Civil Action No. 1515–66. The District Court decision was recently reversed by the Court of Appeals, and the Supreme Court has been asked to review the case.

[2] See H. F. Clark and H. S. Sloan, *Classrooms on Main Street*. New York: Teachers College Press, 1966, p. 4.

[3] See A. H. Belitsky, *Private Vocational Schools and Their Students: Limited Objectives, Unlimited Opportunities*. Cambridge, Mass.: Schenkman Publishing Company, 1969, p. 9.

[4] *Ibid.*, p. 46. This estimate excludes the unused capacity in business, barber, and cosmetology schools.

Since homes serve, in effect, as a substitute for classrooms, the number of correspondence schools is much smaller than the estimated total of private vocational schools, while enrollments are considerably larger. One international correspondence school has had more than 100,000 students during each of the past 5 years. The National Home Study members have students in every State and their total enrollment is equal to that of the private vocational schools. When the enrollments in nonaccredited schools and the armed forces are added to those of the Council, the aggregate figure is 5 million students.

The total number of subjects taught by correspondence is about 600 and includes vocational subjects, high school courses, and college-level courses. Students can naturally hold jobs and learn at their own desired pace.

IV. TYPES OF COURSES OFFERED IN TRADE AND TECHNICAL SCHOOLS

The variety of occupational courses found in private trade and technical schools reflects the unique ability of these schools to respond to the training needs of many industries and professions. About 230 different occupational courses were offered in the more than 500 trade and technical schools examined in this study.[5] Since most schools offered more than one course, the total number of courses provided by these schools was nearly 1,500.

The six major vocational categories (based on the number of courses in each category) were:

Vocational Category	No. of courses
Automobile maintenance and related services	127
Data processing	185
Drafting	131
Electronics	159
Medical services	154
Radio-TV	95
Total	851

Less than 60 percent of all reported courses are included in the above categories, although the three largest areas of training (data processing, electronics, and medical services) are acknowledged to be growth fields in most manpower projections. The other three categories cannot necessarily be designated "traditional," because drafting may be allied with the electronics industry and a radio-TV course may emphasize the repair of color television sets. Even automobile repair offers numerous employment openings for competent workers.

Additional important training fields include courses in: commercial arts; construction; fashion design; needle trades; shoemaking; food processing, merchandising, preparation and service; interior design and related services; major and minor appliance repair and servicing; machine shop; photography; printing; sales, promotions and related services; tool and die design; various forms of transportation and traffic management; and welding. Finally, courses in aerospace engineering technology, waste and wastewater reconversion, gardening, hotel-motel management and related services, and many others, though listed only by a few schools, are areas of growing job opportunities.

Not all of the courses (which are listed in the appendix to this paper) are equivalent to generally accepted occupational designations. However, occupational breakdowns are necessarily somewhat arbitrary, and personal differences are evident with respect to vocational interest, ability and willingness to devote the required time to what is regarded as ideal, well-rounded training.

The great variety of occupational training is matched by a wide diversity in course length and, quite expectedly, in tuition. Tuition averaged nearly $1,200 annually for the courses offered by the members of NATTS in 1966. However, the tuition ranged from about $100 to $4,500.

V. ASPECTS OF INSTRUCTION

The instruction in private vocational schools is highly specialized, with a view to the final employment objective. Therefore, the schools maintain close, but informal contacts with employers. Course content is readily modified to reflect pertinent changes that are reported to school officials by employers. Decisions to add improved facilities can also be made rapidly and directly. This differs from the delays often encountered by public schools and colleges that must seek approval from school boards or legislatures.

Training is provided in a job-simulated setting. Visual aids and operative equipment of all types are typically more important than textbooks. Classroom or lecture instruction is usually followed immediately by supplementary training in the school shop, laboratory, kitchen, or "department store" in order to demonstrate the practical application of theoretical concepts. Most schools also arrange student visits to plants and offices. Modest home assignments are required for many courses, because only those theoretical concepts which are relevant to the performance of a job are taught.

The emphasis upon the functional phases of instruction represents more than an adaptation to the actual requirements of an ultimate job. It also reflects the minimum level of formal education that is required for admission to the schools. A substantial percentage of all schools accept students who have not completed high school. At least 10 percent of the business schools offer a minimum of one course that requires less than a high school education for admission. Approximately 40 percent of the trade and technical schools provide at least one course that does not require completion of high school. Educational requirements for admission to barber and cosmetology schools are lower still; less than 10 percent of the schools demand high school graduation or its equivalent.[6]

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[5] A. H. Belitsky, *op. cit.*, pp. 13–14.

[6] *Ibid.*, pp. 28–32.

The private schools have also devised methods for motivating many of their students who found the general education program in high school unstimulating. Hence, course materials are presented in short, sequential units which reinforce previously learned materials. A sense of achievement is experienced by the typical student, because he is informed of his progress on a continuing basis, rather than at the conclusion of a term or semester.

Another significant aspect of the instruction offered by many of the schools is the provision of training at various levels of accomplishment within related occupations. For instance, in one school students may shift their concentration from a radio-television repair course to a more advanced course in electronics technology, or vice versa, depending on their demonstrated aptitudes and interests. Some schools even provide courses in different occupational fields and permit students to alter their specialty course. These options are, of course, advantageous to students who would otherwise fail their course or else be compelled to accept the dissatisfactions of employment in an occupation that is not their first preference.

A final feature of the instruction is the result of course selectivity among the generally self-financing students. Since the students select occupational courses which they prefer, they are much more likely to be motivated than they would be in the absence of such free choice. Concomitantly, the previously mentioned components of the instruction have such a strong appeal for the students that they contribute *per se* to rather high student motivation. D. P. Ausubel is authoritative in supporting this type of instruction.

> Psychologists have been emphasizing the motivation-learning and the interest-activity sequence of cause and effect for so long that they tend to overlook their reciprocal aspects. Since motivation is not an indispensable condition for short-term and limited-quantity learning, it is not necessary to postpone learning activities until appropriate interests and motivations have been developed.[7]

VI. EVALUATION: A CONTINUING NEED

The ultimate value of instruction in private vocational schools is demonstrated both through the graduates' success in finding training-related positions, and in their occupational progress during their working careers. Only partial assessments of student achievement have, however, been made.[8] In any case, since schools change their curriculums and teaching staffs or simply fail to adopt important changes initiated by other schools, a continuing means of evaluating the training schools must be available.

Accreditation or evaluation of most private vocational schools is voluntary, as it is for all types of education in the United States. States do establish hygienic rules for barber and cosmetology schools; and State and Federal laws determine the scope of training for a limited number of technical occupations, including certified pipewelder, commercial pilot, ship radio officer, and tractor-trailer driver. Generally, however, business, trade and technical schools are evaluated by private accrediting organizations.

Accrediting teams evaluate a school on the basis of its success in achieving the purposes and objectives the school has set for itself. About 500 out of some 1,300 business schools are members of the United Business Schools Association (UBSA), sponsor of a recognized accrediting body which has accredited about 250 schools. Schools that are not accredited by September 1970 will no longer be eligible for active membership. In contrast, only about 10 percent of all trade and technical schools are members of NATTS, which received its accrediting status from the U.S. Comissioner of Education in 1967, 2 years after the Association's establishment.

A "visiting team" from NATTS or UBSA is the principal effective body for evaluating private vocational schools. The team, consisting of technical specialists (industry representatives, educators, and school owners) who are not affiliated with the school under consideration, verifies the school's claims regarding its courses or programs. A check is made of a school's business practices, including job placement records and student recruitment procedures, especially when the school's recruiting representatives work on a commission basis. Student impressions are secured through random interviews.

A NATTS member school must seek accreditation for any newly acquired affiliate and an accredited school must apply for evaluation of any new course.

An accrediting body examines graduate placement records at the time of accreditation, upon receipt of detailed annual reports, and at the 5-year reevaluation intervals. In general, practically all schools provide a placement service for their graduates, and a great majority offer the service "for life." The placement ratio (percentage of a school's graduates placed in jobs by a school) has, however, not been determined with any firm accuracy. Of course, many of the students are indirectly helped by the schools to find jobs; more or less formal sessions are conducted on how to prospect for work; and visits to schools by recruiters from industrial concerns afford students an early and convenient start in job-searching.

School followup of students after graduation is a crucial means of determining the percentage of students who secured training-related jobs and their occupational progress over the years. Most schools follow up their graduates for 1 year, but only about 20 percent of the schools gathered information on their graduates' employment progress after the first year. It would seem, therefore, that private vocational schools—as well as most other educational and training institutions—could improve their followup procedures and, in turn, provide accrediting teams with additional important evidence for evaluating the schools.

In the absence of dependable data on the employment experiences of private vocational school graduates, only indirect and qualified impressions are possible. In the first place, the utilization of the schools under numerous government-financed training programs represents a measure of the confidence placed in the courses, teachers, and managements. Second, close contacts between the schools and employers are likely to ensure the presentation of "relevant" training. Third, graduates recommend the schools to others, and, in fact, they are a principal source of new students. Thus they must have been pleased with the training and employment received.[9]

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[7] D. P. Ausubel, "A Teaching Strategy for Culturally Deprived Pupils," in Miller and Smiley, eds., *Education in the Metropolis*. New York: The Free Press, 1967, p. 293.

[8] K. B. Hoyt's Specialty Oriented Student Research Program at the University of Maryland is virtually the only source for such findings.

In addition to the practical advantages of accreditation, such as detached evaluation and suggestions for improving a school's functioning, accreditation draws attention to competent schools and strengthens their competitive position with counselors and prospective students. Poor schools may be forced to improve their teaching standards, purchase necessary equipment, and generally raise their capital base.

The importance of voluntary accreditation is especially apparent when it is noted that less than half of all States license the private vocational schools and that a considerably smaller percentage of the schools carefully evaluate instructional courses.[10] Principal interests of the regulating States include: financial structure (e.g., requirement to post bond), teacher qualifications, course outlines, adequacy of equipment, student contracts, and advertising claims.

In general, the inspection of private schools by most State supervisors is less thorough than that of a NATTS accrediting team. Each State supervisor in even the larger States frequently must oversee a large number of schools. New York and possibly a few other States utilize subject specialists in their evaluative inspections when a school introduces a new course. According to New York law, each course must be reevaluated every 5 years; this is similar to a NATTS provision.

Most of the 20 States that regulate private schools require instructors to have work experience, ranging from 2 years in Colorado to 8 years in Massachusetts, in the vocational area they are teaching. Usually work experience is an alternative to formal education, and no State requires more than a high school education. However, a survey of instructors in the member schools of NATTS disclosed that about 60 percent of the instructors actually had some college education and more than one-third of the total had at least 4 years of college educaton.[11] The larger independent schools plus those operated as subsidiaries of corporations often pay the tuition of their instructors enrolled part time in college courses that are related to their teaching fields.

VII. INSTRUCTOR ROLES

It is noteworthy that numerous policies regarding instructors in private vocational schools are still exceptional cases or experiments in other schools. For instance, most private schools consider a sizable number of student failures in one instructor's course or in several of his courses over time an indication of the instructor's failure.

Instructors in private vocational schools are urged to consider their students as "clients," not "charges." An important financial accountability, therefore, resides with the school and its instructors. The supervisor of a school for electronics technicians once observed that each prospective instructor must be critically evaluated, since the referrals of former students account for at least 50 percent of a school's student body. The schools are convinced that creditable teaching performances can be insured by making teaching capability the main criterion for reward and advancement; and instructors are not usually given tenure.

A distinctive instructor-student relationship in the vocational school naturally influences the form and manner of instruction in such schools. For example, the instructors at many schools engage in "group teaching on an individual basis." This consists of students proceeding at the same pace in the theoretical part of their course and at different rates of progress in the practical or shop training. Students who are deficient in the theory portion of a course are encouraged to seek aid in frequently conducted review classes.

Shop training, on the other hand, is apparently more readily learned and applied, although there are differences in performance levels here, too. It is therefore an instructor's responsibility to circulate freely among individuals or small groups of students.

Small classes and individualized instruction make many of the schools an ideal setting for training both students who failed in secondary schools and persons with a variety of handicaps who are referred by a Vocational Rehabilitation Center. Students with varied capacities surely require instructors who are not limited to an unchanging lesson plan. In addition, instructors must be able to accommodate students who are at different stages of progress, because students can enroll in many of the courses at frequent intervals (i.e., there is no single starting date).

In view of instructor responsibilities, the typical student-teacher ratio for classroom instruction or lectures is small—at least when compared with the ratios found in the introductory subjects of many colleges and universities. About 60 percent of the NATTS members had a ratio of 24 or less students per instructor. Of course, the average ratio is still lower in the shop, laboratory, and machine practice. The majority of the schools assigned 19 or less students to an instructor at any given time.[12]

The student-teacher ratio is also significant since teachers are often expected to counsel students. Although not licensed to provide guidance (only a small minority of schools employ certified counselors), the teachers can assist students who have been inadequately counseled (or not counseled at all) while in high school. This instructor requirement is a direct result of the limited number of high school guidance personnel and their equally limited views on postsecondary vocational education. As a result, many persons drop out from high school, and even many who graduate, have insufficient knowledge of occupational training opportunities and the labor market. A substantial proportion of students are not thoroughly familiar with the courses provided by the private schools, or else they learn about the schools through friends attending them, members of their families, newspaper advertisements, or sales representatives of the schools. As a major consequence of these informal lines, many young persons who enroll in the schools are likely to do so with incomplete information on the nature of training, requirements of the occupation they are training for and the opportunities for advancement.

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[9] Eighty-five percent of about 1,100 surveyed students gave their schools at least an "average" rating. See A. H. Belitsky, *op. cit.*, p. 125.

[10] "Licensing is nothing more than a permit to do business, having regard generally to safety and commercial standards. Certification, on the other hand, is generally related to curriculum, instructional staff, facilities, etc. . . ." See R. Fulton, "Proprietary Schools," *Encyclopedia of Educational Research*, Fourth Edition.

[11] Seven hundred and twenty-six full-time and part-time instructors were included in the 65 schools responding. See E. L. Johnson, *A Descriptive Survey of Teachers of Private Trade and Technical Schools Associated with the National Association of Trade and Technical Schools*, doctoral dissertation submitted to The George Washington University. Reproduced in part by Griswold Institute Print Shop, Cleveland, 1967, pp. 57, 70.

[12] A. H. Belitsky, *op. cit.*, pp. 82–83.

The counseling continues throughout a course for many students and may involve a fatherly form of encouragement that is not available at home. This includes the provision of extra assistance after class hours to a small group or even to an individual student to overcome elementary deficiencies in arithmetic and reading comprehension.

VIII. STUDENT CHARACTERISTICS AND NEEDS[13]

Since students are the major "consumers" at private vocational schools, it has been in the interest of school administrators and instructors to adjust to student differences in age, educational attainment, ability, and health.

Although the average age of the enrolled students is comparatively young, there have been numerous instances of success in training older persons, both healthy and those ailing physically or emotionally. The study of NATTS schools disclosed a median age of 20 years for students enrolled in the day sessions; only about 10 percent of the students were 26 or older. The average age of the evening students was considerably higher, with nearly two-fifths being 26 or older. Most evening students had been employed full time, and a high percentage of them still found it necessary to work full time during the day while training for a specialty within their occupation, or for a completely different vocation. For both day and evening sessions, the general age range at the NATTS schools during 1965 to 1967 was 17 to 48 years; but some schools even had students who were in their sixties.

Although enrollees in the trade and technical schools are predominantly men, several schools do provide considerable training opportunities for women in such courses as medical and dental assisting, commercial art, and hotel-motel management. The women naturally account for the large majority of students enrolled in business and cosmetology schools.

Flexibility of the schools in accommodating students of varied background and needs is particularly evident with regard to educational preparation. Student bodies include:

1. High school dropouts with no occupational training.
2. High school graduates of a general education program who lack any specific preparation for employment.
3. High school graduates who fail to pass the private schools' aptitude tests in algebra or even arithmetic.
4. Persons preparing for a licensable occupation.
5. College dropouts, or even college students and graduates, desiring an otherwise unavailable course, such as computer programing.
6. Persons for whom the formal education requirement is eased because they have had several years of employment experience, but are currently unemployed or finding it difficult, for physical reasons, to remain in their present occupations.

Besides taking account of their students' educational preparation, school administrators adjust the scheduling of courses to the requirements of students. For some courses, new students are enrolled as often as once each week. The majority of schools have four new classes annually, but they may accept students on a monthly basis. Students can also attend either day or evening sessions, and they can choose to attend on a full- or part-time basis. Courses given by members of NATTS ranged from one-half week to 130 weeks. The median for these courses was 40 weeks. Most courses require twice as long when taken on a part-time basis. The option of enrolling in a course on either a full-time or part-time basis and the great variations in course length afford considerable flexibility to students. Finally, practically all trade and technical schools operate at least 48 weeks annually, permitting the ambitious student to complete the already compact course most expeditiously.

After a typical student is enrolled in a private school, his major challenge is having adequate funds to finance all expenses during the period of education. Although empirical data are unavailable, it is likely that students are predominantly from middle income families where the father is not employed in a professional or managerial position. Only a small minority of students attending trade and technical schools can rely upon their parents or personal savings to pay for their entire schooling. For example, more than two-thirds of the students enrolled at a large technical school, which has been granted recognition for transfer of credits to several colleges and universities, are compelled to work on a part- or full-time basis.[14] The school owners' practice of accepting deferred payments is a useful, albeit limited, form of financial assistance that is available in most schools. Under this practice, students may elect to pay their tuition in installments throughout the year, rather than in one or two lump-sum payments.

Despite financial pressures, the student dropout rate is only approximately 20 percent in these schools—lower than the dropout rate in most high schools and colleges. This is at least partially due to student selection of courses which satisfy individual vocational interests. Financial problems are the major reasons for student failure to complete courses. The next most important reasons cited—the presence of family problems and securing a full time job—also suggest the presence of financial difficulties for at least some of the students. School owners report that only a minor percentage of students fail to complete their courses due to lack of ability.

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[13] It is not known to what extent blacks and disadvantaged members of other minorities have been enrolled in the private schools. Probably most of the blacks enjoying such opportunities receive financial aid under programs of the Veterans Administration, Vocational Rehabilitation agencies, the Manpower Development and Training Act, and other government agencies. However, in some nonprofit schools, notably the Opportunities Industrialization Center (OIC), blacks have been the principal beneficiaries. The OIC was organized in Philadelphia, but several of the training centers have been established recently in other cities.

[14] A. H. Belitsky, *op. cit.*, p. 106.

IX. PROSPECTS FOR PRIVATE VOCATIONAL SCHOOLS

Private vocational schools are likely to experience a consistent growth in enrollments and greater general acceptance as an important training resource for persons who do not attend college. Moreover, the congressional recommendation for use of the schools under provisions of the Vocational Education Act could lead to joint ventures with public hgh schools.

The types of courses offered in these highly flexible schools will be a function of at least four factors. In the first place, the schools will continue to adapt to those areas of the economy undergoing expansion and innovation. For example, the schools were among the first offering courses in the allied health field, computer programing and commercial flying. Second, and especially within a specific community, the private schools will offer those courses that are either not taught in the public schools or else are unavailable in sufficient number to meet the desires of students. The third factor is the extent to which public schools, and even colleges throughout the country, will decide to subcontract with the private schools for those vocational education courses they cannot provide for their students. A fourth factor is both the increased corporate subcontracting of training with the schools plus the significant expansion in corporate purchase and operation of the schools. This factor is also likely to have an independent influence upon the general growth of the schools.

The types of courses offered and the educational requirements for admission determine, to a great extent, the nature of the student bodies in the schools. In all probability, the students' average level of formal education has risen faster than the average educational requirement for admission to the schools during recent years. This conclusion is based on the author's study comparing admission requirements with actual qualifications of students. The greater educational preparation of most students could lead more schools to raise the level of sophistication in many of their occupational training courses.[15]

On the other hand, since most trade and technical schools have unused capacity and an interest in enrolling more students, their programs might be broadened to accommodate the large number of people who need initial training, upgrading, or retraining. This would involve accepting more persons with lower educational attainment. The author recommends a government loan-grant program as an equitable means for enabling these persons to attend private vocational schools.

X. TOWARD EQUALITY OF EDUCATIONAL OPPORTUNITY [16]

It would be operationally desirable to have a government loan-grant program for all persons seeking employment-related training in private vocational schools. There is, however, a more important reason for universalizing the program—namely, an impressive growth in social concern for commitment to "free public education."

The goal of equality of educational opportunity must naturally also provide more persons in low-income families the option of securing a college education. Nevertheless, equality (or more accurately, equity) will not be achieved by placing an exaggerated emphasis upon college preparatory programs in high school. Many students simply lack either the interest or the ability to attend a college or even a junior college. Also, a community college, public technical institute, or area vocational school may not always be available. Even where "free" schools are available, the courses that a prospective student wants may not be offered, or else the course length and its contents may differ from his preferences.

In view of the free or heavily subsidized education that is accessible to a sizable and rapidly increasing number of students in universities, colleges, and other public institutions, it would be equitable to improve the opportunities of students who choose to attend private vocational schools. The realistic and economically sound recognition and usage of the private schools could be a major means for expanding the laudable goal of equal educational opportunity.

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[15] Only a minority of trade and technical schools have thus far applied to colleges and actually received partial transfer credits for students desiring to attend college. Business schools may possibly have been more active in this regard.

[16] See *Ibid.,* pp. 144–150 for a more detailed discussion.

APPENDIX

Types of Courses Offered in 544 Reporting Trade and Technical Schools *

	No. of Courses	
AUTO MAINTENANCE AND RELATED SERVICES		
Appraiser—Auto Damage	2	
Attendant—Service Station	3	
Mechanic—		
Basic and Master	50	
Diesel	6	
Salesman—Parts Counter	1	
Specialist—		
Air Conditioning	8	
Automatic Transmission	13	
Body and Fender Repair	22	
Conventional and Power Brakes	4	
Front End and Wheel Alignment	6	
Engine Tune-Up	12	*127*
COMMERCIAL ARTS		
Artist—Commercial	31	
Consultant—Color	1	
Designer—		
Greeting Card	2	
Textile	3	
Glass Blower—Neon	1	
Illustrator—		
Children's	1	
Fashion	8	
General	11	
Letterer	1	
Painter—Sign	2	*61*
CONSTRUCTION		
Building Craftsman—		
Electrician	8	
Heavy Equipment Operator and Mechanic	5	
Mason	2	
Painter	1	
Plumber and Pipefitter	3	
Steamfitter	1	
Structural Iron Worker	1	
Cabinetmaker (incls. Woodworking Techniques)	7	
"Engineer"—		
Architectural Aide	3	
Civil Aide	1	
Construction Technician	3	
Estimator	3	
Maintenance Man—		
Technician	2	
Superintendent	1	*41*
DATA PROCESSING		
Computer Maintenance	23	
DATA PROCESSING (*cont.*)		
Computer Programmer	76	
Data Processer (incls. Keypunch and Tab Operator)	86	*185*
DRAFTING		
Blueprint Reader	6	
Draftsman—		
General (incls. basic, intermediate and advanced)	44	
Architectural	16	
Electro-Mechanical	4	
Electronic and Electrical	16	
Engineering	13	
Mechanical	22	
Structural	6	
Illustrator—Technical	3	
Renderer—Architectural	1	*131*
DRYCLEANING AND LAUNDRY		
Drycleaner	3	
Helper—Laundry	2	
Manager—Drycleaning	2	
Presser—Laundry/Factory	2	
Spotter	1	*10*
ELECTRONICS[a]		
Servicer	22	
Technician[b]	137	*159*
FASHION DESIGN, NEEDLE TRADES AND SHOEMAKING		
Buyer—Assistant	3	
Designer—Fashion and Assistant Fashion	12	
Dressmaker	9	
Fitter	2	
Patternmaker and Grader	10	
Repairman/Rebuilder—Power Sewing Machine	1	
Sewer—		
Needle Trades	9	
Power Machine	4	
Shoemaker/Shoe Repairman	2	
Tailor and Alterer	11	*63*
FLORISTRY AND GROUNDSKEEPING		
Designer—Floral	3	
Groundsworker—		
Gardener	2	
Landscaper	1	
Nursery Worker	1	

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*SOURCE: A. H. Belitsky, *op. cit.*, appendix to chapter 2.

[a] Some of the courses offered in this field include training in data processing. At the other extreme, some might have been more appropriately placed under the less dramatic headings of "Electrical" or "Electricity," but this was impossible to determine from the titles as reported.

[b] Electronics Technician courses prepare for work in a broad variety of occupational settings — including manufacturing plants, laboratories, consulting firms, construction, etc.

	No. of Courses	
FLORISTRY AND GROUNDSKEEPING (*Cont.*)		
Retailer—		
Florist	3	
Sales Clerk	2	
Shopowner	2	*14*
FOOD PREPARATION, PROCESSING, SERVICE AND MERCHANDISING		
Preparation—		
Baker	1	
Chef	3	
Kitchen Helper	2	
Processing—		
Meat Cutter	6	
Meat Wrapper	2	
Retailing—		
Cashier, Grocery Stocker and Checker	6	
Market Manager	2	
Service—		
Dietetics and Food Service Management	2	
Waiter	1	*25*
FUNERAL WORK		
Embalmer	3	
Funeral Director	3	*6*
HOTEL/MOTEL OPERATION		
Maintenance Personnel—		
Executive and House Steward	1	
Housekeeping	2	
Manager	5	
Office Personnel—		
Accountant and Cashier	2	
Clerk	1	
PBX Operator	1	*12*
INDUSTRIAL MANAGEMENT		
"Engineer"—Time Study	2	
Manager—Industrial (Industrial Mgmt. Techniques)	5	*7*
INTERIOR DESIGN AND RELATED SERVICES		
Designer—		
Interior	10	
Furniture	1	
Related-Skill Workers—		
Carpet Layer	1	
Drapery Maker	2	
Linoleum—Tile Floor Layer	1	
Slipcover Maker	2	
Upholsterer	4	*21*
INVESTIGATION		
Fire and Explosion	1	
General	1	
Insurance	1	*3*

	No. of Courses	
JEWELRY DESIGN AND REPAIR		
Diamond Setter	4	
Jewelry Maker and Repairman	2	
Watch Worker (incls. elementary and advanced; also includes engraving)	7	*13*
MACHINE SHOP		
(Includes courses in layout, operation and inspection, as well as basic machines)	30	*30*
MAJOR AND MINOR APPLIANCE REPAIR AND SERVICING		
Technician—		
Air Conditioning-Refrigeration—Heating	9	
Repairman—		
Electric Motor	6	
Master Appliance	4	
Office Machine	2	
Small Appliance	3	
Serviceman—		
Air Conditioning	12	
Oil Burner	5	
Refrigeration	12	*53*
MEDICAL SERVICES		
Aide—		
Geriatric	1	
Home Health	1	
Hospital	2	
Institutional	1	
Nursing	4	
Pediatric	1	
Assistant—		
Dental	25	
Doctor's Office	3	
Laboratory	3	
Medical	24	
Examiner—Medical Claims	1	
Hygienist—Dental	1	
Nurse—		
Licensed Vocational	1	
Practical	8	
Orderly	1	
Secretary—Medical[c]	23	
Technician—		
Dental	8	
Laboratory	9	
Medical	13	
Optical	1	
Technologist—		
Dental	17	
X-Ray	6	*154*

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[c] Although other listings of office occupations are excluded, an exception is made for *medical secretary* because it is assumed that a principal part of this training leads to technical proficiency.

0 S259

PERFORMING ARTS

	No. of Courses	
Performer—Dance, Music (incls. opera and concert singing), Theater (incls. cinema, stage and TV acting)	6	
Dramatist—Radio/TV	1	
Speaker	1	*8*

PERSONAL SERVICES

Finishing—Personal	3	
Modeling	5	
Swedish Massage	1	*9*

PHOTOGRAPHY

Photographer—		
Commercial	3	
Medical	1	
Motion Picture	1	
Newspaper		
Portrait	4	
Printer/Retoucher—		
Airbrush Technique	1	
Colorist	3	
Dye-Transfer Printing	1	
Negative Retouching	2	
Repairman—Camera	1	*18*

PRINTING

Artist—Graphic	5	
Assistant—General Print Shop	1	
Letterpress—		
Hand Composition	1	
Pressman	1	
Linotype Maintenance	3	
Linotype Operator	4	
Monotype Keyboard and Casting Machine Operator	1	
Lithography—		
Lithographer	1	
Multilith Operator	1	
Offset Cameraman	1	
Offset Printing	2	
Photolithographer	1	
Platemaker	1	
Pressman	2	
Stripper	1	
Silkscreen Technician	1	*27*
Business Manager	1	
Scorekeeper (also incls. softball scorekeeping)	1	
Umpire	2	
Farrier (incls. some veterinary courses)	1	
Gunsmith	1	*8*

RADIO—TV

	No. of Courses	
Broadcaster	19	
Repairman	34	
Salesman	2	
Technician—		
Communications (incls. preparation for FCC license)	39	
Color TV	1	*95*

RECREATION AND SPORTS

Athletic Trainer	1	
Bartender	1	
Baseball Personnel—		
Business Manager	1	
Scorekeeper (also incls. softball scorekeeping)	1	
Umpire	2	
Farrier (incls. some veterinary courses)	1	
Gunsmith	1	8

SALES, PROMOTION AND RELATED SERVICES

Promotion—		
Advertiser	5	
Copywriter	2	
Market Research	1	
Public Relations	1	
Sales—		
Auctioneer	2	
Merchandising	2	
Professional Salesmanship	1	
Sales and Management	7	*21*

TOOL AND DIE DESIGN

(Includes plastic molding courses; also includes both separate and combined courses—i.e., certain schools offer separate courses in tool design and die design, others combine them with one another and/or with tool and die making.)	54	*54*

TRANSPORTATION—AIR

Administrator—Aviation Specialist	2	
Communications—FAA	6	
Flight and Operations Personnel—		
Auxiliary—		
Dispatcher	1	
Hostess	6	
Instruments	1	
Ramp Agent	1	
Technician—Airframe Power Plant Mechanic	7	
Technician—Radar	1	
Pilot	5	
Office Personnel—		
Airline Travel Agency	4	
International Travel	1	
Reservationist	12	*47*

	No. of Courses	
TRANSPORTATION—FREIGHT		
Supervisor—		
Cargo	4	
Freight Claim	1	
Rate Analyst	1	*6*
TRANSPORTATION—HIGHWAY		
Driver—		
Bus	1	
Truck—		
Diesel	2	
Heavy	1	
Straight	1	
Tractor Trailer	2	*7*
TRANSPORTATION—SEA		
Ship Builder	1	
Shipboard Personnel—		
Deck Officer—Merchant Marine	2	
"Engineer"—Marine	1	
Pilot—Merchant Marine	2	
Technician—Navigational	2	
Underwater Operations Personnel—		
Decompression Chamber Operator	2	
Deep Sea Diver	1	*11*

	No. of Courses	
TRANSPORTATION—SPACE		
Technician—Aerospace Engineering	2	*2*
TRANSPORTATION—TRAFFIC MANAGEMENT		
Traffic Manager	5	
Transportation Specialist	4	*9*
WASTE RECONVERSION		
Technician—Waste and Wastewater	1	*1*
WELDING		
Welder—		
General	23	
Arc	9	
Arc and Acetylene Combination	3	
Electric	1	
Gas	2	
Heli-Arc	6	
Oxy-Acetylene	6	
Pipe	4	*54*
TOTAL COURSES		1,483

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